



South Carolina Department of Health
and Environmental Control

Division of Procurement Services

Invitation for Bid

Solicitation No.: IFB-32625-12/11/07-EMW

Date Issued: 11/1/07

Procurement Officer: E. Madison Winslow

E. Madison Winslow

Phone No.: (803) 898-3487

E-mail Address: winsloem@dhec.sc.gov

DESCRIPTION: Corrective action for petroleum releases – UST Permit Number 07359, Columbia, SC

The Term "Offer" Means Your "Bid" or "Proposal"

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SUBMIT OFFER BY (Opening Date/Time): **December 11, 2007/2:30 pm E.T.**

NUMBER OF COPIES TO BE SUBMITTED: **One (1) original**

QUESTIONS MUST BE RECEIVED BY: **November 27, 2007/2:30 p.m. E.T.** See Specific Requirements, Number 2

SUBMIT YOUR SEALED OFFER TO EITHER OF THE FOLLOWING ADDRESSES:

MAILING ADDRESS:	PHYSICAL ADDRESS:
SC DHEC Division of Procurement Services Bureau of Business Management 2600 Bull Street Columbia, S.C. 29201	SC DHEC Division of Procurement Services Bureau of Business Management 2600 Bull Street, Room 1200 – Aycock Bldg. Columbia, S. C. 29201

Offers Must Be Sealed: See provision entitled "Submitting Your Offer"

AWARD & AMENDMENTS	Award will be posted on or after December 18, 2007 . The award, this solicitation, and any amendments will be posted at the following web address: http://www.scdhec.net/procurement
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You must submit a signed copy of this form with your offer. By submitting a bid or proposal, you agree to be bound by the terms of the solicitation. You agree to hold your offer open for a minimum of thirty (30) calendar days after the opening date.

NAME OF OFFEROR (Full legal name of business submitting the offer)		OFFEROR'S TYPE OF ENTITY: (Check one) <input type="checkbox"/> Sole Proprietorship <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation (tax-exempt) <input type="checkbox"/> Corporate entity (not tax-exempt) <input type="checkbox"/> Government entity (federal, state, or local) <input type="checkbox"/> Other (See provision entitled "Signing Your Offer")
AUTHORIZED SIGNATURE (Person signing must be authorized to submit binding offer to enter contract on behalf of Offeror named above.)		
TITLE (Business title of person signing above)		
PRINTED NAME (Printed name of person signing above)	DATE	

Instructions regarding offeror's name: Any award issued will be issued to, and the contract will be formed with, the entity identified as the offeror above. An offer may be submitted by only one legal entity. The entity named as the offeror must be a single and distinct legal entity. Do not use the name of a branch office or a division of a larger entity if the branch or division is not a separate legal entity, *i.e.*, a separate corporation, partnership, sole proprietorship, etc.

OFFEROR'S HOME OFFICE ADDRESS (Address for the offeror's principal place of business)		
CITY	STATE	ZIP CODE
PHONE	FACSIMILE	E-MAIL
STATE OF INCORPORATION (If offeror is a corporation, identify the state of Incorporation)		
TAXPAYER IDENTIFICATION NO. (See provision entitled Taxpayer Identification Number)		

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL**BID NUMBER: IFB-32625-12/11/07-EMW****I. SCOPE OF WORK****A. SOLICITATION STATEMENT**

The Underground Storage Tank (UST) Program of the South Carolina Department of Health and Environmental Control (SCDHEC) is seeking services to perform excavation and disposal of petroleum-contaminated soil at regulated underground storage tank sites. The objective is to excavate and dispose of a predetermined volume of petroleum-contaminated soil. All offerors must be either a South Carolina Certified Class I or Class II UST Site Rehabilitation Contractor or be qualified for certification within fifteen (15) days of notice of intent to award, in such cases the final award will be made after successful certification.

B. SCHEDULE OF DELIVERABLES

The following table summarizes the deadlines for deliverables associated with this contract.

DELIVERABLE DUE	DEADLINE
Questions	By 2:30 p.m. ET, 11/27/07
Sealed Bids	By 2:30 p.m. ET, 12/11/07
Implementation of Work	30 days from Notice to Proceed
Project Completion	Within 60 days from Notice to Proceed
Excavation Report	Within 90 days from Notice to Proceed

C. SITE SPECIFIC INFORMATION

The scope of work defined in this solicitation is to be implemented at:

UST Permit #	Facility Name	Site Address	Date Release Reported	Appendix #
07359	Former Columbia Maintenance Facility	3736 Marsteller St., Columbia, SC	December 30, 1991	A

II. CONTRACTUAL REQUIREMENTS**A. GENERAL REQUIREMENTS**

1. **CONTRACT PERIOD:** The contract will be effective from date of award until the corrective actions are complete as described in this contract.
2. **EQUAL OPPORTUNITY EMPLOYMENT:** Contractor must agree to make positive efforts to employ women, minorities, and minority-owned businesses.
3. **AMENDMENTS:** All amendments to this solicitation shall be in writing from the SCDHEC Procurement Officer indicated on page one of this solicitation. SCDHEC shall not be legally bound by any amendment, interpretation or settlement that is not in writing.
4. **RESTRICTION . . .** THE ONLY OFFICIAL CONTACT PERSON AT SCDHEC DURING THE SOLICITATION AND AWARD OF THIS CONTRACT IS THE PROCUREMENT OFFICER INDICATED ON PAGE 1 OF THIS SOLICITATION. OFFERORS ARE NOT TO CONTACT ANY OTHER SCDHEC PERSONNEL LOCATED OUTSIDE THE BUREAU OF BUSINESS MANAGEMENT.
5. **AWARD:** Award will be made to a South Carolina Certified Class I or Class II UST Site

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Rehabilitation Contractor based on the total cost for all sites listed. The total cost must be advantageous to the State of South Carolina. In the event that two or more bidders submit the lowest total amount, the award, if made, will be decided in accordance with the Tie Bids procedure in Section B.(6) of the Underground Storage Tank Environmental Remediation Procedures. Submittal of a "No Bid" for an individual site in this solicitation will be considered non-responsive and will result in rejection of the overall bid.

6. **REASONABLE COST:** SCDHEC reserves the right to reject any and all bids that appear to be above the customary and reasonable cost for the same scope of work in a similar geologic setting.
7. **SITE WORK VERIFICATION:** The contractor will be required to excavate and backfill the area defined for the site in Appendix A of this solicitation. Verification that final corrective action goals have been met will be based upon submitted documentation and on-site inspection.
8. **REPORTS:** Deliver one copy of each report to: SCDHEC, Bureau of Land and Waste Management, UST Program, 2600 Bull Street, Columbia, SC 29201. A minimum of one (1) copy of each report must be delivered to the parties listed on the Distribution List included in the appendix.
9. **INVOICING:** Invoices will be submitted to: SCDHEC, Bureau of Land and Waste Management, UST Program, ATTN: Financial Section, 2600 Bull Street, Columbia, SC 29201. A separate invoice for the site must be delivered with the final reports. The final invoice must be received at the above address within four months of project completion or funds will be uncommitted as required by the Section 44-2-40(B) of the SUPERB Act. If funds are uncommitted the submitted invoice will be held until funding is available. **Payment will only be made for documented work completed as specified in this contract.**
10. **NOTIFICATION FOR FAILURE TO PERFORM:** If the contractor fails during the course of this contract to meet any condition or specification as outlined in this document without prior notification to the project manager of circumstances legitimately beyond the control of the contractor, the award will be voided by SCDHEC. In the event that the award is voided due to a breach of contract as outlined above, no payment of any invoices will be made. Any voiding of an award due to breach of contract will apply only to the site where the deficiency(ies) occurred and will not directly affect other sites awarded in conjunction with this solicitation.
11. **LIMITATIONS:** The accepted corrective action cost will be final and will not be increased or cancelled for any reason (e.g., increased subcontractor costs, equipment malfunction, acts of nature, etc.) with the exception of unforeseen subsurface conditions as determined solely at the discretion of the SCDHEC. Any action taken by the SCDHEC under this condition that might result in the cancellation of a corrective action award due to circumstances described in this condition will apply only to the affected site and will not directly affect other sites awarded in conjunction with this solicitation. Payment will only be made for documented work completed as specified in this contract. Once corrective action has been initiated under this contract, in the event of a cancellation due to the circumstances prescribed in this condition, final payment will be based on the documented work completed for each site. Contractor-owned items used on-site for the contract that are damaged or destroyed by common acts of nature, improper maintenance or handling, theft or vandalism will not be replaced or reimbursed by the SUPERB Account.

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B. SPECIFIC REQUIREMENTS

1. **CONTRACT SCOPE:** This contract is for corrective action at one site in South Carolina.
2. **INQUIRIES:** Questions or requests for information must be submitted in writing and received by 2:30 P.M. ET, November 27, 2007. After this date, no further questions will be addressed. A written response will be provided to all requestors of the solicitation. The questions may be faxed to E. Madison Winslow in the SCDHEC Bureau of Business Management at (803) 898-3505.
3. **SITE SPECIFIC DETAILS:** A brief technical summary of the releases and Excavation Corrective Action Plan (ECAP) for the site are attached in Appendix A. The complete technical file for the site will be available for review through the Freedom of Information (FOI) Office located at the Stern Building, 8911 Farrow Road, Columbia, SC. **Offerors are strongly encouraged to review the files to ensure a complete understanding of the project requirements. The successful offeror will be responsible for all information in the technical files.**
Appointments to view the technical files may be scheduled on weekdays between the hours of 8:30 A.M. to 5:00 P.M. by calling the SCDHEC Freedom of Information Office at (803) 898-3882.

III. SPECIFICATIONS for EXCAVATION AND DISPOSAL

A. GENERAL SPECIFICATIONS

1. **SUBMITTALS:** All offerors must submit the Solicitation Response. The proposal must outline the total cost (in U.S. dollars) to complete the scope of work.
2. **MINIMUM REQUIREMENTS:** All rehabilitation activities associated with a UST release must be performed by either a SCDHEC certified Class I or Class II UST Site Rehabilitation Contractor as required by R.61-98 or be qualified for certification within fifteen (15) days of notice of intent to award, in such cases the final award will be made after successful certification. All reports must be sealed by a Professional Engineer or Professional Geologist registered in the State of South Carolina. All laboratory analysis for chemicals of concern must be performed by a SC-certified laboratory. All applicable certification, training, permits, applications, and fees associated with excavation or transportation of soil, transportation or operation of equipment, and any other action requiring a permit are the responsibility of the contractor. Any required business or occupation license and occupational safety and health training (e.g., OSHA) as defined by the laws and regulations of the United States of America, the State of South Carolina, the county or city is also the responsibility of the contractor. The terms and conditions of all applicable permits will be met. Any contaminated groundwater, soil, or construction material must be properly transported and disposed of, or treated at an approved facility with prior approval from SCDHEC.

B. PERFORMANCE REQUIREMENTS

1. **EXCAVATION CORRECTIVE ACTION PLAN IMPLEMENTATION:** After award of the contract, UST Program will issue a notice to proceed with ECAP implementation. The contractor will implement the ECAP (see Appendix) within 30 days of receipt of the notice to proceed. Disruption to the normal business at the site will be kept to a minimum. The contractor will return the site to the condition that existed prior to installation of the corrective action system (e.g., asphalt paved areas will be repaved with asphalt, concrete areas replaced with concrete, grass area will have soil replaced to the original grade and sodded with grass, etc.). The contractor will, at all times, keep the site free from waste materials and rubbish related to the corrective action. Until completion of

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the corrective action, the contractor will keep the premises in a clean, neat and workmanlike condition satisfactory to SCDHEC. All soil and wastewater generated on-site will be removed from the site promptly. Manifests documenting the proper disposal of the soil, wastewater, or FPP must be included in the appropriate report.

Implementation of the ECAPs is not authorized until the contractor receives correspondence from the UST Program indicating that the required public notice period has been successfully completed. If premature implementation occurs, the UST Program will not reimburse those costs from the SUPERB Account, and the bid award will be reduced by that amount. If SCDHEC agrees with early implementation to better protect human health in an emergency and provides approval in writing, early implementation without any reduction to the corrective action amount will be authorized.

2. **UTILITY SURVEY:** After the UST Program issues a notice to proceed with ECAP implementation and before excavation occurs, the contractor will conduct a utility survey of the site. The contractor is responsible for identifying all surface and subsurface utilities. In the event that the results of the utility survey indicate that it is not possible to proceed with excavation, the contract will be cancelled, and the contractor will be reimbursed \$1,000.00 for personnel mobilization, utility survey, and survey report preparation and associated costs.
3. **REPORTING:** Complete and submit an excavation report. Deliver one paper and one electronic (pdf) copy of each report to: SCDHEC, Bureau of Land and Waste Management, UST Program, 2600 Bull Street, Columbia, SC 29201. A copy of the report must be delivered to the parties listed on the Distribution List included in the appendix for the site. The excavation report for each site is due within 90 days from the Notice to Proceed. The excavation report must include:
 - A. A narrative portion describing excavation and disposal activities and including photographs of field work.
 - B. A scaled site map showing the locations of buildings, roads, monitoring wells, the former UST system, utilities, and the excavation area superimposed.
 - C. A table of screening results of soils returned to the excavation.
 - D. Pre-excavation and post-excavation compaction test results.
 - E. A copy of the SCDHEC approval letter and manifests/ weigh tickets for all contaminated soil, groundwater or FPP removed from the site for treatment and/or disposal.
 - F. Signature and seal by a professional engineer or professional geologist registered in the State of South Carolina.

All rehabilitation activities associated with the UST releases must be performed by either a SC Certified Class I or Class II UST Site Rehabilitation Contractor. All air, soil, and groundwater analyses must be performed by a South Carolina certified laboratory.

4. **EXCAVATION:** The area to be excavated for the site is detailed in Appendix A. The successful contractor should be prepared to handle saturated soil. Please see the appendix for the estimated depth below the water table that the excavation will breach. The excavation must be backfilled with properly compacted clean soil and leveled to the existing grade. Uncontaminated soils (<10 ppm) must be bermed and covered while stockpiled and may be returned to the excavation. All excavation activities must be conducted in strict accordance with 29 CFR 1926.

In the event that the contractor determines that excavation should continue past the originally estimated excavation area, prior approval must be obtained from the UST Program project manager. In such cases, the costs for the additional disposal and backfill will be based on the

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awarded cost divided by the originally estimated in place cubic yards to be excavated. The contractor must measure the final dimensions of the excavated area. The contractor and UST Program project manager must agree upon the measurement.

5. **BACKFILL & COMPACTION:** The excavation must be backfilled in 8-inch compacted lifts with suitable fill material and compacted at a minimum to the pre-excavation dry density. The contractor must determine the pre-excavation density by cutting to a depth of two feet and conducting a set of density tests (one test per 2,000 square feet with a minimum of 2 tests) using the scientifically accepted density test of his/ her choice. The post-excavation density testing must be conducted by the same method as the pre-excavation testing. The contractor shall perform a minimum of one set of density tests for every vertical foot of compacted fill emplaced. For the purposes of this contract, a set of density tests shall consist of one test per 2,000 square feet with a minimum of 2 density test(s) per vertical foot required. Density tests must be evenly distributed throughout the excavation area. Locations and results of the pre-excavation and post-excavation tests will be submitted in the excavation report.
6. **SECURITY:** During excavation activities, the contractor is responsible for securing the excavation (e.g. flagging, cones, barriers, etc.) in order to prevent persons or traffic from entering the area. In the event that excavation and backfilling activities are not completed at the end of the work day, the contractor must ensure that the excavation area is adequately marked and secured overnight.
7. **DISPOSAL:** Properly dispose of all contaminated soil, wastewater (groundwater, runoff, precipitation) or free-phase product generated during the implementation of the ECAP for each site. The disposal facility selected for treatment and disposal of any contaminated soil and groundwater must be a SCDHEC-approved facility. The owner/operator of the UST facility is considered the generator for any contaminated soil and groundwater or FPP. The contractor must document disposal of contaminated soil, groundwater, and FPP in the excavation report.
8. **SITE RESTORATION:** Disruption to the site's normal business will be kept to a minimum. **The contractor will return the site to the condition prior to corrective action (e.g., asphalt paved areas will be repaved with asphalt, concrete areas will be replaced with concrete, grass areas will have soil replaced to the original grade and sodded with grass, etc.).** The initial site conditions are noted in the appendix.

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IV. BID AWARD

A. ACCEPTANCE and DELIVERY STATEMENT

In compliance with the solicitation and subject to all conditions thereof, the offeror agrees, if this bid is accepted within _____ days from date of opening, to complete the corrective action as specified at the prices set forth for all sites as stated below.

For the purpose of this submittal and acceptance of financial approval should it occur, I certify that this company understands the nature of the releases and the geologic conditions at these sites as documented in the technical files and this solicitation. I certify that all operations will be conducted in strict accordance with 29 CFR 1926. Additionally, I certify that this company understands that acceptance is based on total cost to excavate the areas of concern.

Certification No.

Contractor (Print)

Authorized Representative (Print)

Signature

B. SOLICITATION RESPONSE

SITE (Permit #)	FACILITY NAME	CORRECTIVE ACTION COST
A. 07359	Former Columbia Maintenance Facility	
	Total Cost	

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PLEASE READ THE FOLLOWING CAREFULLY PRIOR TO COMPLETING BID

INSTRUCTIONS TO BIDDERS

DISCUSSIONS AND NEGOTIATIONS: By submission of a bid, bidder agrees that during the period following issuance of this solicitation and prior to notification of intent or award of a contract, the bidder shall not discuss this procurement with any party except members of the DHEC Procurement Division or other parties designated in this solicitation. Bidder shall not discuss or attempt to negotiate with the using area or program any aspects of the procurement without prior approval of the DHEC Procurement Division Buyer responsible for the procurement. Infractions may result in rejection of the violator's bid.

1. Unless otherwise required herein, only one signed copy of the invitation to bid is required.
2. Bids "faxed" directly to the DHEC Procurement Office will not be accepted or considered for award.
3. Bids, amendments thereto or withdrawal request must be received by the time advertised for bid opening. It is the bidder's sole responsibility to insure that these documents are received by the person (or office) at the time indicated in this solicitation document. DHEC Underground Storage Tank Environmental Remediation Procedures shall govern any withdrawal request received after the time of the bid opening.
4. When specifications or descriptive papers are submitted with the bid submission, enter bidder's name thereon.
5. Submit your signed bid on this form. Show the bid number on the envelope as instructed. DHEC assumes no responsibility for unmarked or improperly marked envelopes. All envelopes received showing a bid number are placed directly under locked security until the date and time of opening. Do not include more than one bid invitation per envelope. If directing any other correspondence, address the envelope to the Procurement Officer but do not include the bid number on the envelope since it does not include your bid.
6. Bidders must clearly mark as "CONFIDENTIAL" each part of their bid which they consider to be proprietary information that could be **exempt from disclosure** under Section 30-4-40, Code of Laws of South Carolina 1976 (1986 Cum. Supp.; Freedom of Information Act). If any part is designated as confidential, there must be attached to that part an explanation of how this information fits within one or more categories listed in Section 30-4-40. DHEC reserves the right to determine whether this information should be exempt from disclosure and no legal action may be brought against the State, DHEC or its agents for its determination in this regard.
7. By submission of a bid, **you are guaranteeing** that all goods and services meet the requirements of this solicitation during the contract period.
8. **Tie bids** will be resolved as outlined in DHEC Underground Storage Tank Environmental Remediation Procedures.
9. **Do not include any taxes** that DHEC may be required to pay in the bid price. Upon submission of a bid by a state agency, the Procurement Officer will compute a 5% sales and use tax to the non-state agency bids when applicable (service and labor excluded) in determining the low bidder. This procedure conforms to the SC Tax Commission Sales and Use Tax Regulation 117-174-.95.
10. **Correction of errors on this bid form:** All prices and notations should be printed in ink or typewritten. Errors should be crossed out, corrections entered and initialed by the person signing the bid. Erasures or use of typewriter correction fluid may be cause for rejection. No bid shall be altered or amended after the time specified for the bid opening.
11. **Ambiguous bids** that are uncertain as to terms, delivery, quantity, or compliance with this solicitation may be rejected or otherwise disregarded.
12. Any bidder desiring to exercise a grievance may do so under section IV of DHEC Underground Storage Tank Environmental Remediation Procedures. All correspondence should be directed to the Director of Procurement Services, Bureau of Business Management, 2600 Bull Street, Columbia, SC 29201.
13. **Failure to respond** to three consecutive bid notices may result in removal of bidder's name from the mailing list.

GENERAL PROVISIONS

14. DHEC reserves the right to reject any and all bids, and to cancel this solicitation.
15. **Unit prices** will govern over extended prices unless otherwise stated in this solicitation.
16. **Prohibition of Gratuities:** Amended section 8-13-420 of the 1976 Code of Laws of South Carolina States: "Whoever gives or offers to any public official or public employee any compensation, including a promise of future employment, to influence his action, vote, opinion or judgment as a public official or public employee or such public official solicits or accepts such compensation to influence his action, vote, opinion or judgment shall be subject to the punishment as provided by Section 16-9-210 and Section 16-9-220. The provisions of this section shall not apply to political contributions unless such contributions are conditioned upon the performance of specific actions of the person accepting such

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contribution nor shall they prohibit a parent, grand-parent or relative from making a gift to a child, grandchild, or other close relative for love and affection except as hereafter provided".

17. **Bidder's Qualification:** Bidders must, upon request of DHEC, furnish satisfactory evidence of their ability to furnish products or services in accordance with the terms and conditions of these specifications. DHEC reserves the right to make the final determination as to the bidder's ability to provide the products or services requested herein.
18. **Bidder's Responsibility:** Each bidder shall fully acquaint himself with conditions relating to the scope and restrictions attending the execution of the work under the conditions of this solicitation. It is expected that this will sometimes require on-site observation. The failure or omission of a bidder to acquaint himself with existing conditions shall in no way relieve him of any obligation with respect to this bid or to the subsequent contract.
19. **Amendments:** All amendments to and interpretations of this solicitation shall be in writing from the DHEC Procurement Office. Neither DHEC nor the Procurement Officer shall be legally bound by any amendment or interpretation that is not in writing.
20. **Award Criteria:** Award shall be as indicated herein to the lowest responsible and responsive bidder whose bid meets the requirements and criteria set forth in this solicitation. Award may take longer than fourteen days. A copy of the award notice should be posted on Procurement Services' website at: dhec.sc.gov/procurement.
21. **Rejection:** DHEC reserves the right to reject any bid that contains prices for individual items or services that are unreasonable when compared to the same or other bids if the rejection is in the best interest of the State.
22. **Competition:** This solicitation is intended to promote competition. If the language, specifications, terms and conditions, or any combination thereof restricts or limits the requirements in this solicitation to a single source, it shall be the responsibility of the interested bidders to notify the DHEC Procurement Office in writing so as to be received five days prior to the opening date. Notification may be "faxed" to the DHEC Procurement Office, (803) 898-3505. The solicitation may or may not be changed but a review of such notification will be made prior to award.
23. **Order of Precedence:** In the event of inconsistency between provisions of this solicitation, the inconsistency shall be resolved by giving precedence in the following order; (A) the bidding schedule, (B) the specifications, (C) general conditions, (D) special provisions or special conditions of the contract whether incorporated by reference or otherwise, and (E) instruction to bidders.

GENERAL CONDITIONS

24. **Contract Administration:** Questions or problems arising after award of this solicitation/contract shall be directed to the DHEC Procurement Office, 2600 Bull Street, Columbia, SC, 29201. Reference the solicitation and contract number.
25. **Default:** In case of default by the contractor, DHEC reserves the right to purchase any or all items in default in the open market, charging the contractor with any additional costs. The defaulting contractor shall not be considered a responsible bidder until the assessed charge has been satisfied.
26. **Save Harmless:** (This General Condition does not apply to solicitations for service requirements). The successful bidder shall indemnify and save harmless the State of South Carolina and DHEC and all its officers, agents and employees from all suits or claims of any character brought by reason of infringing on any patent, trade mark or copyright. The bidder shall have no liability to DHEC if such patent, trademark or copyright infringement or claim is based upon the bidder's use of material furnished to the bidder by the State.
27. **Publicity Releases:** By submission of a bid, the contractor agrees not to refer to award of this contract in commercial advertising in such a manner as to state or imply that the products or services provided are endorsed or preferred by DHEC or user.
28. **Tax Credit Availability:** Bidders interested in income tax credit availability by subcontracting with Certified Minority Firms should contact the Office of Minority Business Assistance, 1205 Pendleton Street, Columbia, SC, 29201. (803-734-0562)
29. **Affirmative Action:** The successful bidder will take affirmative action in complying with all Federal and State requirements concerning fair employment and employment of the handicapped, and concerning the treatment of all employees, without regard or discrimination by reason of race, color, religion, sex, national origin or physical handicap.
30. **Assignment:** Unless otherwise indicated in this solicitation, no contract or its provisions may be assigned, sublet, subcontracted, or transferred without the prior written consent of the DHEC Procurement Office.
31. **Termination:** Any contract resulting from this solicitation may be terminated by DHEC by providing a thirty-day advance notice in writing to the successful contractor.
32. **Non-Appropriations:** Any contract entered into by DHEC resulting from this solicitation shall be subject to cancellation without damages or further obligation when funds are not appropriated or otherwise made available to support continuation of performance in a subsequent fiscal period or appropriated year.

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33. **Convenience:** In the event that this contract is terminated or canceled upon request and for the convenience of DHEC without the required thirty days advance written notification, then DHEC shall negotiate reasonable applicable termination costs.
34. **Cause:** Any contract resulting from this solicitation may be terminated without advance notice by DHEC for cause, default or negligence on the part of the successful contractor.
35. **S.C. Law Clause:** Upon award of a contract under this bid, the person/partnership, association or corporation to whom the award is made must comply with the laws of South Carolina which require such person or entity to be authorized and/or licensed to do business with this State. Notwithstanding the fact that applicable statutes may exempt or exclude the successful bidder from requirements that it be authorized and/or licensed to do business in this State. By submission of a bid, the bidder agrees to subject himself to the jurisdiction and process of the courts of the State of South Carolina as to all matters and disputes arising or to arise under the contract and the performance thereof, including any questions as to the liability for taxes, licenses or fees levied by the State of South Carolina.
36. **Quality of Product:** (This general condition does not apply to solicitations for printing or service requirements.) Unless otherwise indicated in this solicitation, it is understood and agreed that any item offered or shipped as a result of this solicitation shall be new and in first class condition, that all containers shall be new and suitable for storage or shipment, and that prices include standard commercial packaging. If items that are other than new (i.e., remanufactured or refurbished) are desired to be bid, the bidder must obtain written permission to bid such items at least five days in advance of the bid opening date. Written permission must be obtained from the DHEC Procurement Office.
37. **Compliance with Federal Requirements:** S.C. State or Federal requirements that are more restrictive shall be followed in bidding, awarding and performance of this contract.
38. **Drug-Free Workplace:** Required by Section 44-107-10 (Drug Free Work-Place Act) of the SC Code of Laws, 1976, as amended. By submission of a bid, the bidder certifies that he will comply with all aspects of the Drug-Free Workplace Act and will not engage in the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance in the performance of this contract. This certification also applies to any individual or firm employed by the contractor.
39. **Confidentiality Policy:** The successful contractor agrees to abide by DHEC's policy of confidentiality which states in part that all information as to personal facts and circumstances given or made available to employees and/or contractors of DHEC in administration of programs shall be held confidential and shall not be divulged without the express written consent of the individual(s) to which it pertains.
40. **Item Substitution:** No substitution of items will be allowed on any purchase made from the awarded contract without written permission from the DHEC Procurement Office.
41. **Outside Contractor Program:** If applicable to scope of contract, contracted employees working on DHEC properties are entitled to information about hazardous chemicals present at DHEC; and DHEC's personnel are entitled to information about hazardous chemicals brought to the facilities by contractors. In order to assure continued compliance with the Hazard Communication Standards while contractors are on DHEC property and to control potential compliance obligations under the Superfund Amendments and Re-authorization Act, it is DHEC's policy to:
 - A. Obtain written assurance that the contractor's employees have been trained to understand the hazards of the chemicals at DHEC and how to use appropriate personal protective equipment. All personal protective equipment and training required for the contractor's employees will be provided by the contractor at the contractor's expense. (This includes SC State General Services employees).
 - B. Require the contractor to notify the DHEC Bureau of Business Management or the appropriate DHEC unit Director when introducing hazardous chemicals into DHEC work areas, which may harmfully expose DHEC employees. If the contractor is introducing such hazardous chemicals into any DHEC facility or onto DHEC property, the contractor shall provide the DHEC Division of Procurement Services or the DHEC unit Director copies of the Material Safety Data Sheets (MSDS) for those chemicals. The DHEC Division of Procurement Services or the DHEC unit Director should provide appropriate information to the DHEC employees before the contractor(s) enter any DHEC facility with chemicals.
 - C. DHEC reserves the right to refuse to allow any contractor to bring any chemical onto DHEC property. The Department also reserves the right to refuse to allow any contractor to bring certain quantities of chemicals on DHEC property.

Appendix A

Distribution List for Plans and Reports

Responsible Party:

Mr. Peter Reinhart
SCDOT
PO Box 191
Columbia SC 29201

Property Owner:

Silver Spur Properties LLC
614 Holly St
Columbia SC 29205

Original Site Conditions

The site is not currently an operating facility. Surface conditions include exposed soil, vegetated areas, and concrete. The contractor is not expected to repave any areas following excavation, backfill, and compaction activities at this facility.

EXCAVATION CORRECTIVE ACTION PLAN

UST Permit # 07359 Release Reported 12/30/1991
Facility Name Fm Columbia Maint. Facility Priority Class 3BA
Project Manager Susan Block

It is estimated that 31,263 cubic feet of soil have been impacted by the petroleum release reported December 30, 1991. Corrective action will consist of excavation and disposal of petroleum-contaminated soils followed by monitored natural attenuation. Prior to excavation, the contractor will conduct a utility survey and present the results to SCDHEC. Excavated soils will be screened and segregated at readings of 10 ppm. Stockpiled soils will be placed on a lined surface and bermed and covered. Petroleum-contaminated soils (>10 ppm) will be properly disposed of at a SCDHEC-approved facility. Uncontaminated soils (<10 ppm) will be returned to the excavation. The area excavated will be backfilled with clean fill soil, leveled to existing grade, and properly compacted to the pre-existing density. Excavation activities will be conducted by a SC Certified UST Class I or Class II Contractor to be determined after completion of project bidding.

Site Specific Information

Depth to Groundwater: ~14 feet
Type of Product Released: Gasoline & Diesel
Receptor & Distance to Receptor: Creek, 250 feet
Estimated Area of Excavation: 3126 square feet
Estimated Depth of Excavation: 15 feet
Estimated Volume of Excavation in in-place cubic yards: 1158 cubic yards

It is estimated that the excavation will breach the water table by one to two feet.

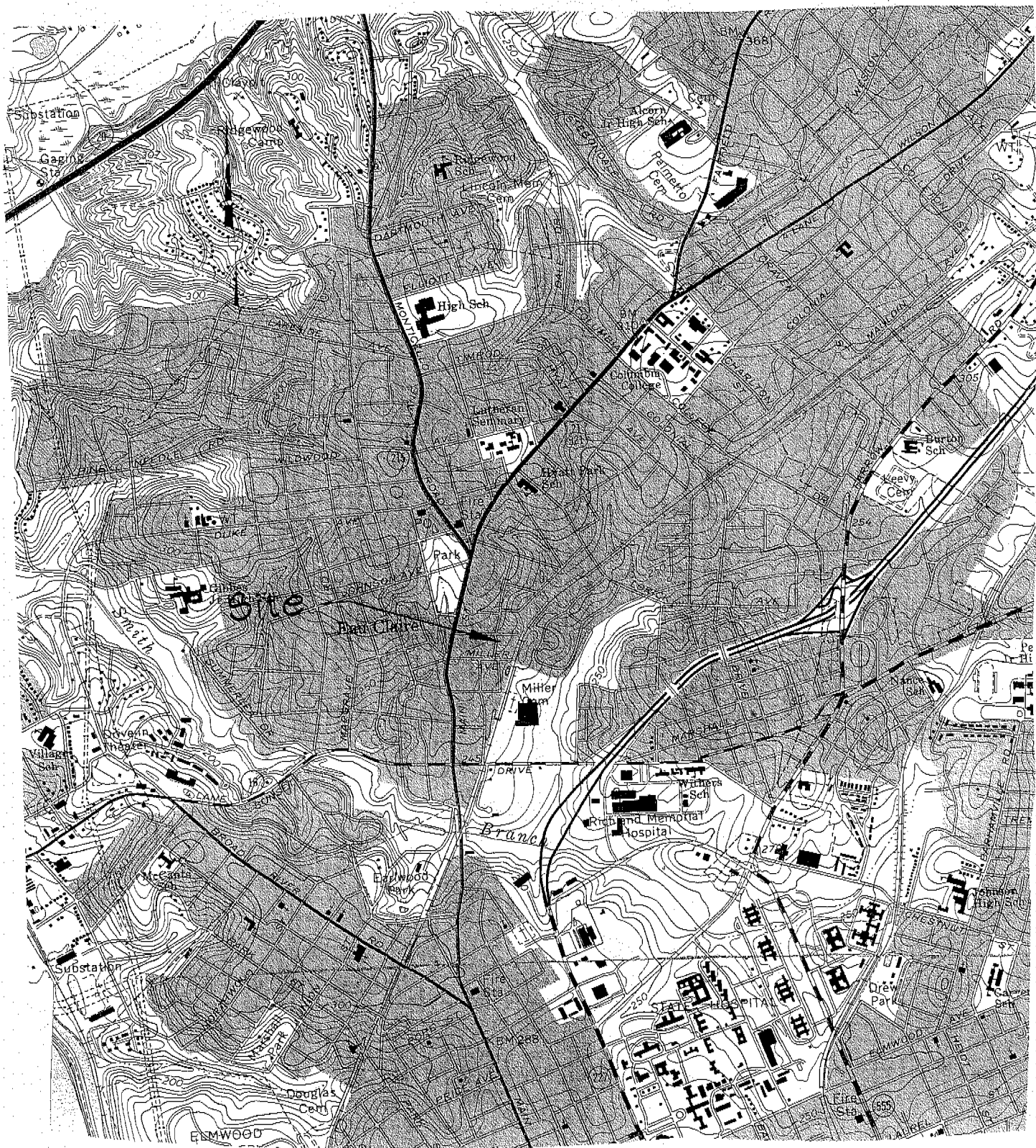
Highest Concentrations of Chemicals of Concern:

	Groundwater	Soil
Benzene	31,000	219
Toluene	60,000	1,050
Ethylbenzene	3,100	5,360
Xylene	16,000	17,750
Naphthalene	1,900	1,580
MtBE	1,400	62.2
Date of Sampling	1/17/2007	8/17/2000
Sample Location	GPW-8, GPW-16	B-4, B-5

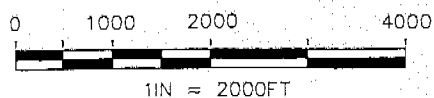
Project Manager Signature 

Date 10/15/7

Attachment: Site map showing estimated area of excavation.



GRAPHIC SCALE



Reference: Columbia North, SC
USGS 7.5 Min. Quad
Contour Interval: 10 feet

Midlands
Environmental
Consultants, Inc.

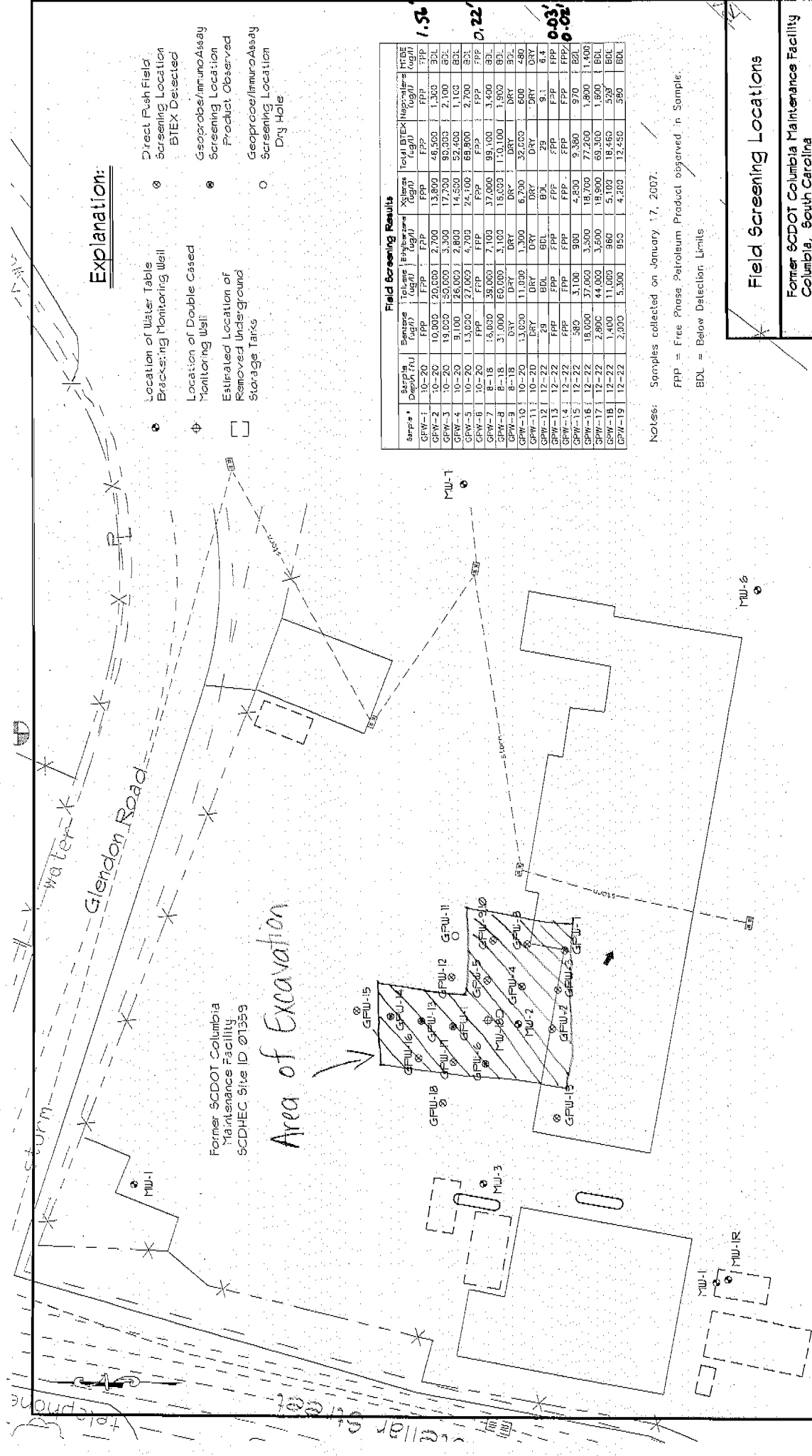
Site Location

Columbia Maint. Facility
3736 Marsteller St., Columbia, SC
SCDHEC Site ID# 07359

Figure 1

MECI 07-1122

SCDHEC
IFB-32625-12/11/07-EMW
Page: 14



Explanation:

- Location of Water Table Screening Location BTEX Detected
- Location of Double Cased Monitoring Well
- Estimated Location of Removed Underground Storage Tanks
- Geoprobe/Immunology Screening Location
- Geoprobe/Immunology Screening Location
- Dry Hole

Field Screening Results									
Sample Depth (ft)	Sample Depth (ft)	Sample Depth (ft)	Sample Depth (ft)	Sample Depth (ft)	Sample Depth (ft)	Sample Depth (ft)	Sample Depth (ft)	Sample Depth (ft)	Sample Depth (ft)
GWU-1	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-2	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-3	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-4	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-5	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-6	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-7	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-8	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-9	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-10	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-11	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-12	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-13	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-14	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-15	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-16	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-17	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-18	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20
GWU-19	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20	10-20

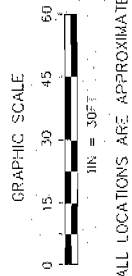
Notes: Samples collected on January 17, 2007.
 FPP = Free Phase Petroleum Product observed in Sample.
 BDL = Below Detection Limits

Field Screening Locations

Former SCDOT Columbia Maintenance Facility
 Columbia, South Carolina
 SCDHEC Site ID 01359

Midlands Environmental Consultants, Inc.

CD 02 87-1123
 DATE REVISED 03/2007
 TOWNSHIP 2



Drawing Based on MECI Field Notes, Tax Maps and a RLS Survey of the Site by Jay S. Joshi dated August 21, 2002.

Location of Water Table Bracketing Monitoring Well	Direct Push Field Screening Location BTEX Detected
Location of Double Cased Monitoring Well	Geoprobe/ImmunoAssay Screening Location Product Observed
Estimated Location of Removed Underground Storage Tanks	Geoprobe/ImmunoAssay Screening Location Dry Hole

Field Screening Results									
Sample *	Sample Depth (ft.)	Disturb Depth (ft.)	Tolerance Depth (ft.)	Enhanced Depth (ft.)	Xylene Depth (ft.)	Total STEC Depth (ft.)	Maximum Depth (ft.)	Notes	
GSW-1	10-20	18,000	20,000	2,700	13,800	46,500	1,300	B/L	
GSW-2	10-20	18,000	20,000	3,300	17,700	90,000	2,100	B/L	
GSW-3	10-20	19,000	20,000	2,800	14,500	58,400	1,100	B/L	
GSW-4	10-20	9,100	26,000	4,700	24,100	66,800	2,700	B/L	
GSW-5	10-20	FPP	FPP	FPP	FPP	FPP	FPP	FPP	
GSW-6	18-20	16,000	39,000	7,100	37,000	99,100	3,000	B/L	
GSW-7	8-18	13,000	60,000	21,000	30,000	100,000	1,900	B/L	
GSW-8	8-20	13,000	21,000	21,000	10,000	10,000	DRY	B/L	
GSW-9	10-20	13,000	1,000	1,300	6,700	32,000	900	460	
GSW-10	10-20	DRY	DRY	DRY	DRY	DRY	DRY	DRY	
GSW-11	12-22	29	B/L	B/L	B/L	29	9.1	6.4	
GSW-12	12-22	FPP	FPP	FPP	FPP	FPP	FPP	FPP	
GSW-13	12-22	FPP	FPP	FPP	FPP	FPP	FPP	FPP	
GSW-14	12-22	FPP	FPP	FPP	FPP	FPP	FPP	FPP	
GSW-15	12-22	560	3,100	900	4,800	9,390	970	B/L	
GSW-16	12-22	18,000	37,000	3,000	30,000	98,000	1,600	B/L	
GSW-17	12-22	4,000	18,000	1,800	18,000	69,300	1,600	B/L	
GSW-18	12-22	4,000	11,000	960	5,100	18,450	5200	B/L	
GSW-19	12-22	2,000	5,300	930	4,200	12,430	590	B/L	


Notes: Samples collected on January 17, 2007.

Free Phase Petroleum Product observed in Sample:

3DIL = 8 g/Lw Detection Limits

Field Screening Locations

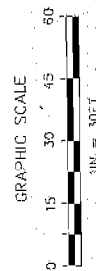
Former SCDOT Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 01359



**Midlands
Environmental
Consultants**

JOE W2. 07-1122
DATE January 23, 2007
FUDGE

Environmental Consultants, Inc.



ALL LOCATIONS ARE APPROXIMATE

Drawing Based on MECI Field Notes, Tax Maps
and a RLS Survey of the Site by
Ray S. Joshi dated August 21, 2002.

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Discription Based on Soil Samples Collected from MW-18D and May Not Represent Actual Lithology)										NO BLOWCOUNTS RECORDED	
5												
10												
15	Product detected from 13.75 to 15.31 feet BGS. (Water Levels do not Indicate Stabilized Water Table Elevations.)											
20	Temporary Monitoring Well Terminated at 20.0 Feet.											
25												
30												
35												

TEST BORING RECORD
 Columbia Maintenance Facility
 Columbia, South Carolina
 SCDHEC Site ID# 07359
 MECI Project Number 07-1122

Boring Number:	GPW-1
Date Drilled:	1/17/2007
Drilled By:	Geologic Exploration Inc.
Logged By:	J. Coleman

Prepared By:
 Midlands
 Environmental
 Consultants, Inc.
 253-B Dooley Road
 SCDHEC
 IFB-32625-12/11/07-EMW
 Page: 17

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Descriptions Based on Soil Samples Collected from MW-18D and May not Represent Actual Lithology)											
5												
10												
	Water level gauged at 13.92 Feet BGS. (Water Levels do not Indicate Stabilized Water Table Elevations.)											
15												
20												
	Temporary Monitoring Well Terminated at 20.0 Feet. Sample Collected on 1/17/07.											
25												
30												
35												

TEST BORING RECORD
Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID# 07359
MECI Project Number 07-1122

Boring Number: GPW-2
Date Drilled: 1/17/2007
Drilled By: Geologic
Exploration Inc.
Logged By: J. Coleman

Prepared By:
Midlands
Environmental
Consultants, Inc.
15315 Oakley Road
SCDHEC
IFB-32625-12/11/07-EMW
Page: 18

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples Collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
15												
20												
	Temporary Monitoring Well Terminated at 20.0 Feet. Sample Collected on 1/17/07.											
25												
30												
35												

TEST BORING RECORD
Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID# 07359
MECI Project Number 07-1122

Boring Number: GPW-3
Date Drilled: 1/17/2007
Drilled By: Geologic
Exploration Inc.
Logged By: J. Coleman

Prepared By:
Midlands
Environmental
Consultants, Inc.
253-B Dooley Road
SCDHEC
IFB-32625-12/11/07-EMW
Page: 19

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples Collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
	Water Level Gauged at 14.00 Feet BGS. (Water Levels do not indicate Stabilized Water Table Elevations.)											
15												
20												
	Temporary Monitoring Well Terminated at 20.0 Feet. Sample Collected on 1/17/07.											
25												
30												
35												

TEST BORING RECORD
Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID# 07359
MECI Project Number 07-1122

Boring Number: GPW-4
Date Drilled: 1/17/2007
Drilled By: Geologic
Exploration Inc.
Logged By: J. Coleman

Prepared By:
Midlands
Environmental
Consultants, Inc.
253-B Donley Road
SCDHEC
IFB-32625-12/11/07-EMW
Page: 20

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples Collected from MW-18D and May not Represent Actual Lithology.)										NO BLOWCOUNTS RECORDED	
5												
10												
15												
20	Temporary Monitoring Well Terminated at 20.0 Feet. Sample Collected on 1/17/07.											
25												
30												
35												

TEST BORING RECORD
Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID# 07359
MEC Project Number 07-1122

Boring Number: GPW-5
Date Drilled: 1/17/2007
Drilled By: Geologic
Exploration Inc.
Logged By: J. Coleman

Prepared By:
Midlands
Environmental
Consultants, Inc.
SCDHEC
IFB-32625-12/11/07-EMW
Page: 21

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples Collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
	Product detected from 13.53 to 13.75 Feet BGS. (Water Levels do not Indicate Stabilized Water Table Elevations.)											
15												
20												
	Temporary Monitoring Well Terminated at 20.0 Feet.											
25												
30												
35												

TEST BORING RECORD
 Columbia Maintenance Facility
 Columbia, South Carolina
 SCDHEC Site ID# 07359
 MECI Project Number 07-1122


Boring Number: **GPW-6**

Date Drilled: **1/17/2007**

Drilled By: **Geologic
Exploration Inc.**

Logged By: **J. Coleman**

Prepared By:


**Midlands
Environmental
Consultants, Inc.**

SCDHEC
 IFB-32625-12/11/07-EMW
 Page: 22

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples Collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
15												
20												
	Temporary Monitoring Well Terminated at 20.0 Feet. Sample Collected on 1/17/07.											
25												
30												
35												

TEST BORING RECORD
Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID* 07359
MECI Project Number 07-1122

Boring Number: GPW-7
Date Drilled: 1/17/2007
Drilled By: Geologic
Exploration Inc.
Logged By: J. Coleman

Prepared By:
Midlands
Environmental
Consultants, Inc.
753 E. Oakley Road
SCDHEC
IFB-32625-12/11/07-EMW
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Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based Soil Samples Collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
	Water Level Gauged at 14.02 Feet BGS. Product Sheen Observed. (Water Levels do not Indicate Stabilized Water Table Elevations.)											
15												
20	Temporary Monitoring Well Terminated at 18.0 Feet. Sample Collected on 1/17/07.											
25												
30												
35												

TEST BORING RECORD
Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID# 07359
MECI Project Number 07-1122

Boring Number: **GPW-8**
Date Drilled: **1/17/2007**
Drilled By: **Geologic
Exploration Inc.**
Logged By: **J. Coleman**

Prepared By:
**Midlands
Environmental
Consultants, Inc.**
153-B Dooley Road
SCDHEC
IFB-32625-12/11/07-EMW
Page: 24

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples Collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
15												
20	Temporary Monitoring Well Terminated at 18.0 Feet. Dry Hole.											
25												
30												
35												

TEST BORING RECORD
Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID# 07359
MECI Project Number 07-1122

Boring Number: **GPW-9**
Date Drilled: **1/17/2007**
Drilled By: **Geologic
Exploration Inc.**
Logged By: **J. Coleman**

Prepared By:
SCDHEC
IFB-32625-12/11/07-EMW
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253-B Dooley Road
Lexington, South Carolina 29073
(803) 808-2043 fax: 808-2048

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples Collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
15	Water Level Gauged at 13.96 Feet BGS. (Water Levels do not indicate Stabilized Water Table Elevations.)											
20												
	Temporary Monitoring Well Terminated at 20.0 Feet. Sample Collected on 1/17/07.											
25												
30												
35												

TEST BORING RECORD
Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID# 07359
MECI Project Number 07-1122


Boring Number: GPW-10
Date Drilled: 1/17/2007
Drilled By: Geologic
Exploration Inc.
Logged By: J. Coleman

Prepared By:
Midlands
Environmental
Consultants, Inc.
253-B Dooley Road
SCDHEC
IFB-32625-12/11/07-EMW
Page: 26

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Sammles Collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
15												
20	Temporary Monitoring Well Terminated at 20.0 Feet. Dry Hole.											
25												
30												
35												

TEST BORING RECORD
Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID# 07359
MECI Project Number 07-1122

Boring Number: **GPW-11**
Date Drilled: **1/17/2007**
Drilled By: **Geologic Exploration Inc.**
Logged By: **J. Coleman**

Prepared By:
 **Midlands Environmental Consultants, Inc.**
253-B Doolee Road
SCDHEC
IFB-32625-12/11/07-EMW
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Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples Collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
15												
20												
	Temporary Monitoring Well Terminated at 20.0 Feet. Sample Collected on 1/17/07.											
25												
30												
35												

TEST BORING RECORD
 Columbia Maintenance Facility
 Columbia, South Carolina
 SCDHEC Site ID# 07359
 MECI Project Number 07-1122

Boring Number: **GPW-12**
 Date Drilled: **1/17/2007**
 Drilled By: **Geologic
Exploration Inc.**
 Logged By: **J. Coleman**

Prepared By:
**Midlands
Environmental
Consultants, Inc.**
 SCDHEC
 IFB-32625-12/11/07-EMW
 Page: 28

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples Collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
15	Product Detected from 13.72 to 13.75 Feet BGS. (Water Levels do not Indicate Stabilized Water Table Elevations.)											
20												
25	Temporary Monitoring Well Terminated at 22.0 Feet.											
30												
35												

TEST BORING RECORD
Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID* 07359
MECI Project Number 07-1122

Boring Number: **GPW-13**
Date Drilled: **1/17/2007**
Drilled By: **Geologic
Exploration Inc.**
Logged By: **J. Coleman**

Prepared By:
**Midlands
Environmental
SCDHEC**
IFB-32625-12/11/07-EMW
Page: 29

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples Collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
15	Product Detected from 13.69 to 13.71 Feet BGS. (Water Levels do not Indicate Stabilized Water Table Elevations.)											
20												
25	Temporary Monitoring Well Terminated at 22.0 Feet.											
30												
35												

TEST BORING RECORD
Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID# 07359
MECI Project Number 07-1122

Boring Number: **GPW-14**
Date Drilled: **1/17/2001**
Drilled By: **Geologic
Exploration Inc.**
Logged By: **J. Coleman**

Prepared By:

Midlands
SCDHEC
IFB-32625-12/11/07-EMW
Page: 30

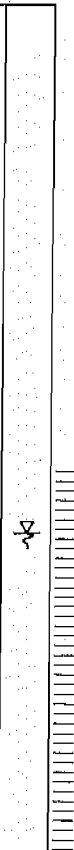
(803) 808-2043 fax: 808-2048

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
15												
20												
25												
30												
35												

TEST BORING RECORD
Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID# 07359
MECI Project Number 07-1122


Boring Number: GPW-15
Date Drilled: 1/17/2007
Drilled By: Geologic
Exploration Inc.
Logged By: J. Coleman

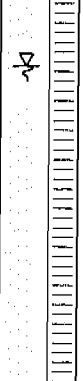
Prepared By:
Midlands
Environmental
Consultants, Inc.
753-B Dooley Road
SCDHEC
IFB-32625-12/11/07-EMW
Page: 31

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples Collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
15	Water Level Gauged at 13.67 Feet BGS. (Water Levels do not Indicate Stabilized Water Table Elevations.)											
20												
25	Temporary Monitoring Well Terminated at 22.0 Feet. Sample Collected on 1/17/2007.											
30												
35												

TEST BORING RECORD
Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID# 07359
MECI Project Number 07-1122

Boring Number: **GPW-16**
Date Drilled: **1/17/2007**
Drilled By: **Geologic Exploration Inc.**
Logged By: **J. Coleman**

Prepared By:
 **Midlands Environmental Consultants, Inc.**
SCDHEC
IFB-32625-12/11/07-EMW
Page: 32

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples Collected from MW-18D and May not Represent Actual Litholgy.)											
5												
10												
15												
20												
25	Temporary Monitoring Well Terminated at 22.0 Feet. Sample Collected on 1/17/2007.											
30												
35												

TEST BORING RECORD
 Columbia Maintenance Facility
 Columbia, South Carolina
 SCDHEC Site ID# 07359
 MECI Project Number 07-1122

Boring Number: **GPW-17**
 Date Drilled: **1/17/2007**
 Drilled By: **Geologic
Exploration Inc.**
 Logged By: **J. Coleman**

Prepared By:

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Consultants, Inc.
 SCDHEC
 IFB-32625-12/11/07-EMW
 Page: 33

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples Collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
15	Water Level Gauged at 13.61 Feet BGS. (Water Levels do not Indicate Stabilized Water Table Elevations.)											
20												
25	Temporary Monitoring Well Terminated at 22.0 Feet. Sample Collected on 1/17/2007.											
30												
35												

TEST BORING RECORD
 Columbia Maintenance Facility
 Columbia, South Carolina
 SCDHEC Site ID# 07359
 MECI Project Number 07-1122


Boring Number: **GPW-18**

Date Drilled: **1/17/2007**

Drilled By: **Geologic
Exploration Inc.**

Logged By: **J. Coleman**

Prepared By:


**Midlands
Environmental
Consultants, Inc.**
 SCDHEC
 IFB-32625-12/11/07-EMW
 Page: 34

Depth (Feet)	Description	Diagram	Penetration Blows Per Foot									
			0	5	10	20	40	60	80	100		
	Asphalt with Stone Base											
	Orange, Fine to Medium Sandy Clayey SILT (Soil Description Based on Soil Samples Collected from MW-18D and May not Represent Actual Lithology.)											
5												
10												
15												
20												
25												
30												
35												

TEST BORING RECORD
Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID# 07359
MECI Project Number 07-1122

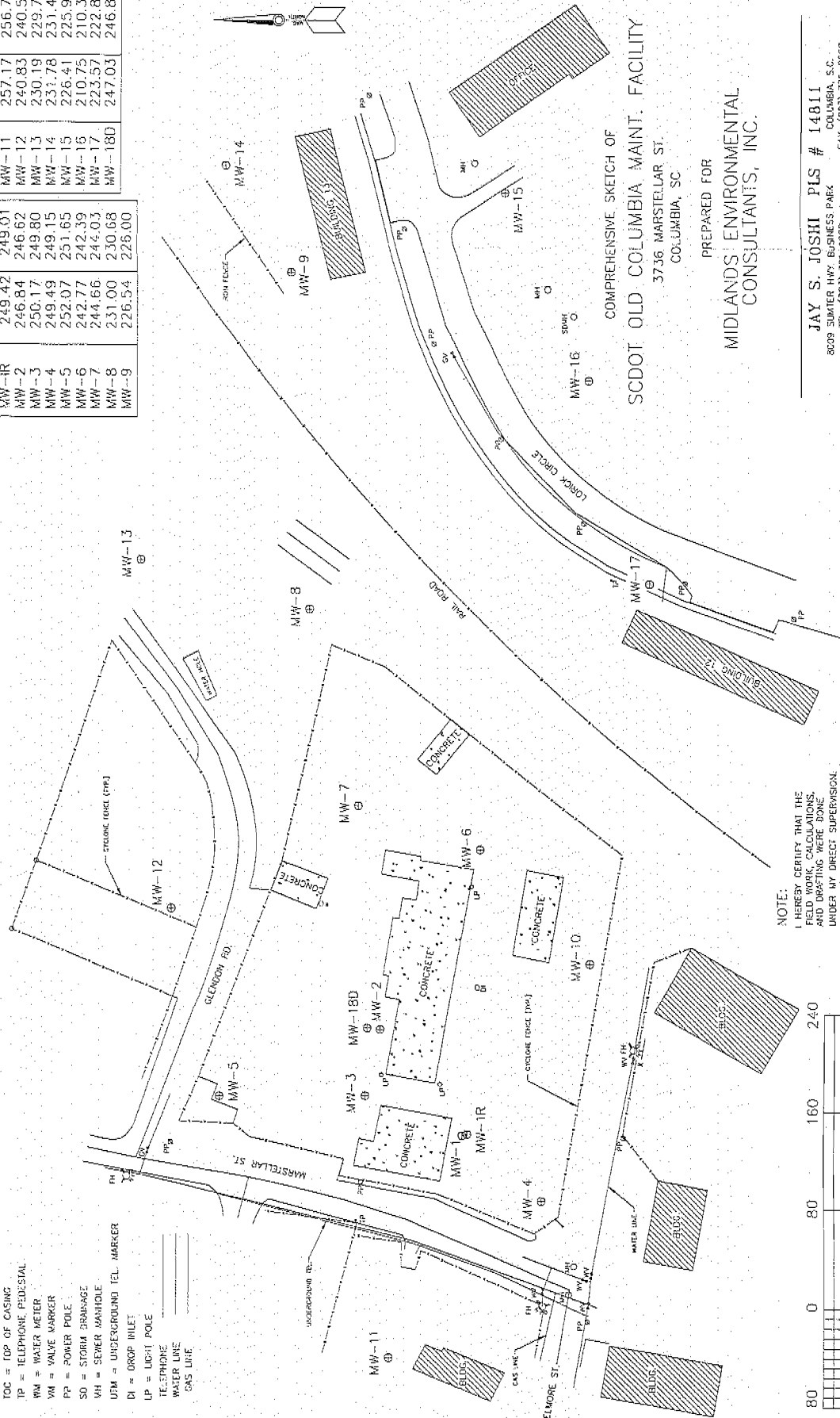
Boring Number: GPW-19
Date Drilled: 1/17/2007
Drilled By: Geologic
Exploration Inc.
Logged By: J. Coleman

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Midlands
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SCDHEC
IFB-32625-12/11/07-EMW
Page: 35

MW#	TOL	FOC	MW#	TOL	TOC
MW-1	249.47	249.07	MW-10	243.95	243.68
MW-1R	249.42	249.01	MW-11	257.17	256.77
MW-2	246.84	246.62	MW-12	240.83	240.50
MW-3	250.17	249.80	MW-13	230.19	229.74
MW-4	249.49	249.15	MW-14	231.78	231.44
MW-5	252.07	251.65	MW-15	226.41	225.98
MW-6	242.77	242.39	MW-16	210.75	210.30
MW-7	244.66	244.03	MW-17	223.57	222.85
MW-8	231.00	230.68	MW-180	247.03	246.81
MW-9	226.54	226.00			

LEGEND:

- ⊕ = MONITORING WELL
- TOL = TOP OF LID
- TOC = TOP OF CASING
- TP = TELEPHONE PEDISTAL
- WM = WATER METER
- VM = VALVE MARKER
- PP = POWER POLE
- SD = STORM DRAINAGE
- WM = SEWER MANHOLE
- UTM = UNDERGROUND TEL. MARKER
- DI = DROP INLET
- LP = LIGHT POLE
- TELEPHONE
- WATER LINE
- GAS LINE



NOTE:
I HEREBY CERTIFY THAT THE
FIELD WORK, CALCULATIONS,
AND INSTRUMENTATION WERE
UNDER MY DIRECT SUPERVISION

COMPREHENSIVE SKETCH OF
SCDOT OLD COLUMBIA MAINT. FACILITY
3736 MARSTELLAR ST.
COLUMBIA, SC

PREPARED FOR
MIDLANDS ENVIRONMENTAL
CONSULTANTS, INC.

JAY S. JOSHI PLS # 14811
3029 SUMMIT HWY. BUSINESS PARK
COLUMBIA, S.C.
TEL: (803) 775-9909 FAX: (803) 775-2638
DATE: 06/21/02 JOB: 031502B

Explanation:

- Location of Water Table
- Estimated Location of Removed Underground Storage Tanks
- Location of Double Cased Monitoring Well
- Estimated Location of Abandoned Underground Storage Tanks

Estimated Groundwater Flow Direction

Property Line

Buried Gas Line

Buried Water Line

Buried Sewer

Telephone Under Ground Telephones

Fence

Storm Sewer

Storm Sewer Drop Inlet

Location of Surface Water Sample Collection

Geologic Cross Section (Refer to Figures 4 & 5)

Site Features

Former SCDOT Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 071359

Midlands Environmental Consultants, Inc.

JOB NO. 02-116

DATE: September 5, 2002

FIGURE

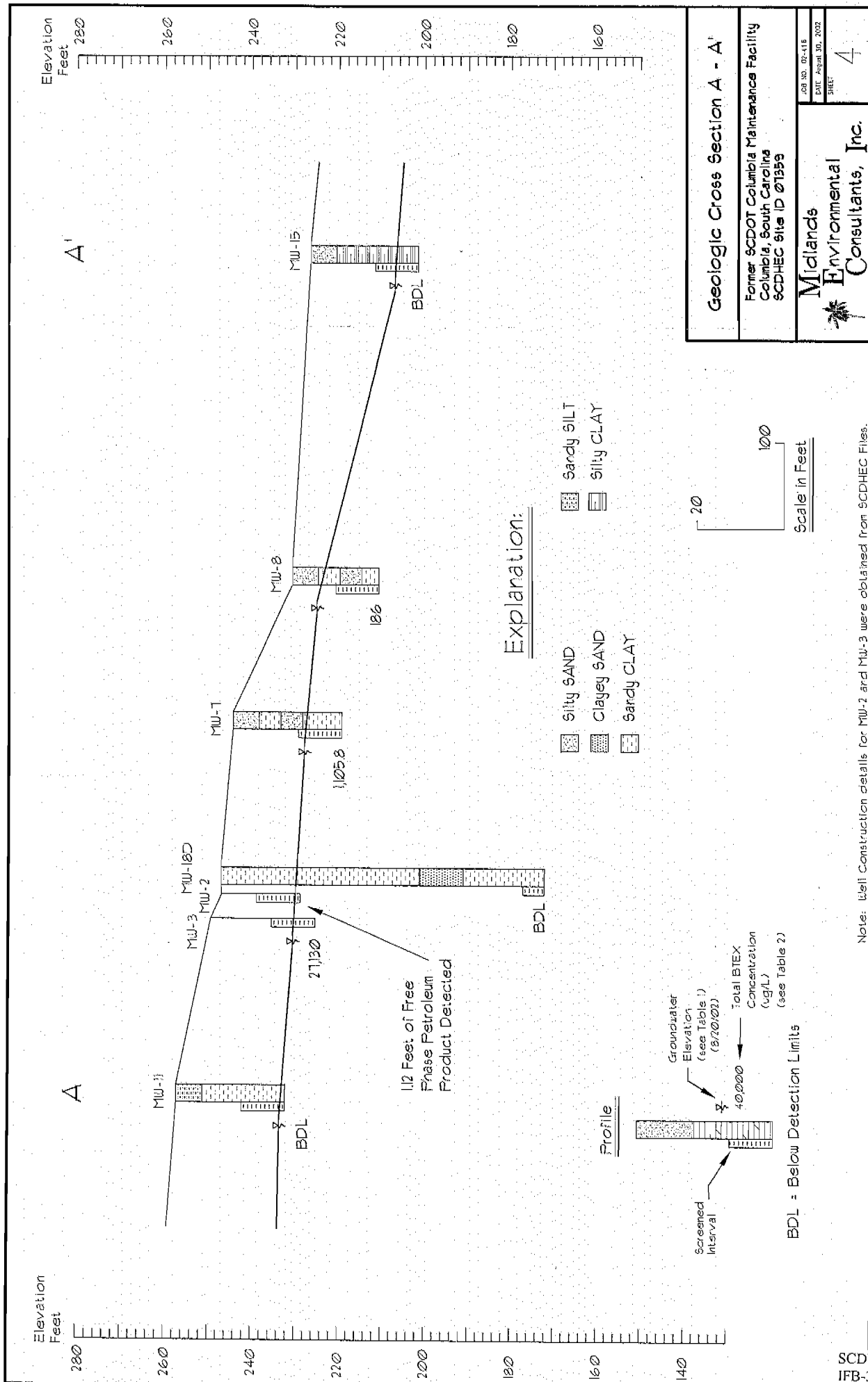
3

GRAPHIC SCALE



ALL LOCATIONS ARE APPROXIMATE

Drawing Based on MECI Field Notes, Top Maps and a RLS Survey of the Site by S. Joshi dated August 21, 2002.



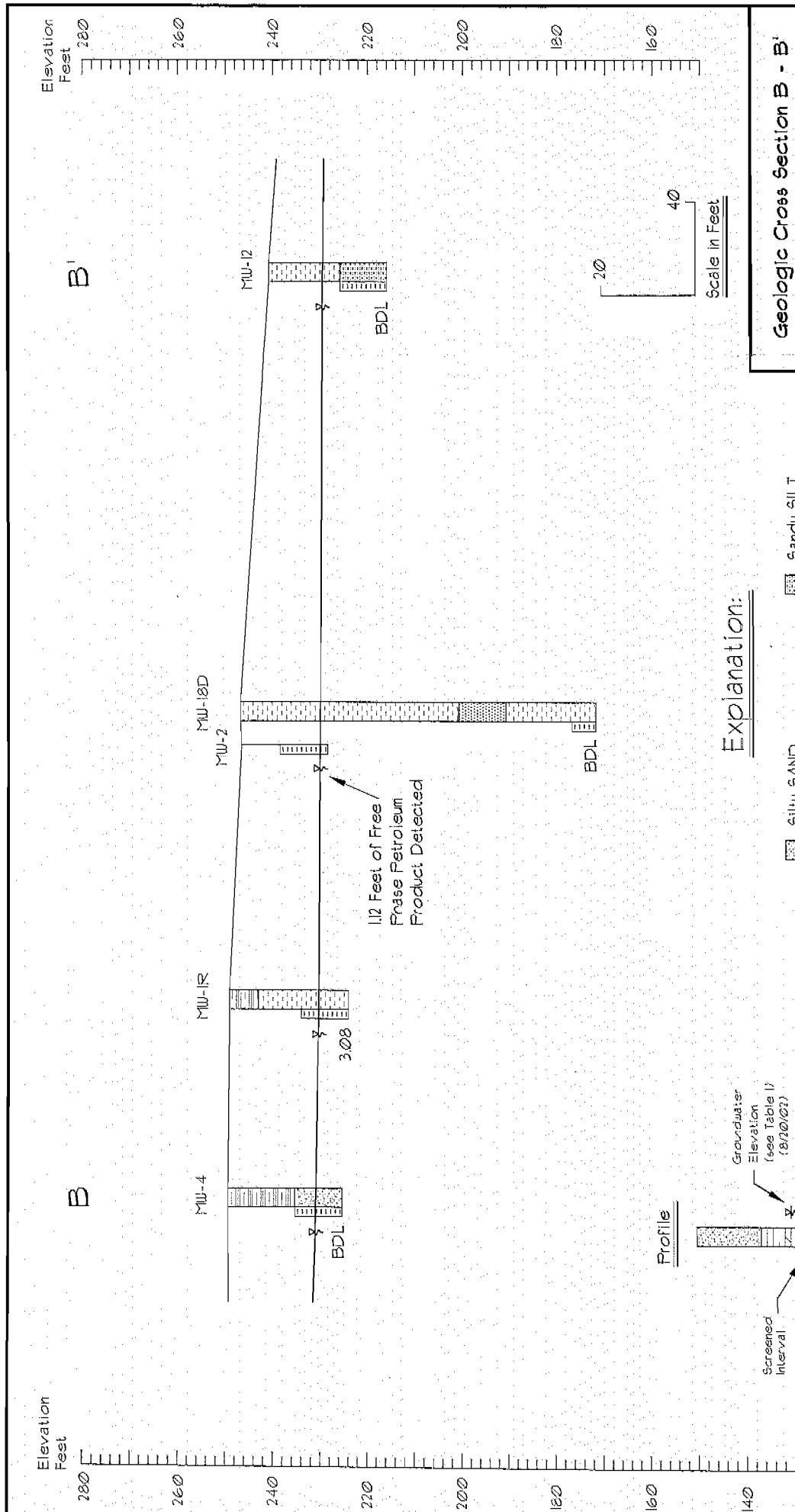
Note: Well Construction details for MW-2 and MW-3 were obtained from SCDHEC Files.

Geologic Cross Section A - A'

Former SCDOT Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 01359

Midlands Environmental Consultants, Inc.

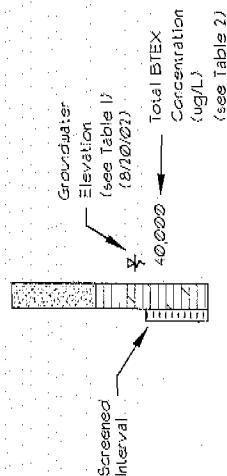
CDR 93 05-415
DWL April 30, 2002
SHEET 4



Explanation:

- Silty SAND
- Clayey SAND
- Sandy CLAY
- Sandy SILT
- Silty CLAY/CLAY

Profile



Note: Well Construction details for MW-2 and MW-4 were obtained from SCDHEC Files.

Geologic Cross Section B - B'

Former SCDOT Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 07359

Midlands

Environmental
Consultants, Inc.

JCS NO. 02-416

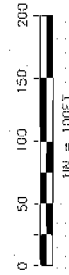
DATE: August 20, 2002

SHEET

5

Geoprobe/ImmuAssay Screening Location Dry Hole	Geoprobe/ImmuAssay Screening Location Not Detected
Geoprobe/ImmuAssay Screening Location BTEX Detected	Temp. Well/ImmuAssay Screening Location BTEX Detected
	Temp. Well/ImmuAssay Screening Location Not Detected

GRAPHIC SCALE



ALL LOCATIONS ARE APPROXIMATE

Former SCDOT Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 07359

**Midlands
Environmental
Consultants**

JCB No. 02-415

JEV:03
S 3170

Drawing Based on MECI Field Notes, Tax Maps
and a RLS Survey of the Site by
S. Joshi dated August 21, 2002.

SCDHEC
IFB-32625-12/11/07-EMW
Page: 40

Immunoscreening Results


Sample ID	Depth (feet)	Result	Sample ID	Depth (feet)	Result	Sample ID	Depth (feet)	Result	Sample ID	Depth (feet)	Result
GPW-1	20-24	1.94	GPW-36	20-24	BDL	GPW-67	24-28	1.95	GPW-102	23-27	BDL
GPW-2	25-29	0.31	GPW-37	20-24	DRY HOLE	GPW-68	20-24	0.06	GPW-103	24-28	BDL
GPW-3	30-34	1.19	GPW-37A	21-25	0.04	GPW-69	20-24	BDL	GPW-104	24-28	BDL
GPW-4	35-39	0.13	GPW-38	20-24	0.24	GPW-70	20-24	BDL	GPW-105	24-28	0.03
GPW-5	40-44	0.02	GPW-39	20-24	0.80	GPW-71	21-25	BDL	GPW-106	24-28	0.13
GPW-6	45-49	0.03	GPW-40	20-24	DRY HOLE	GPW-72	24-28	BDL	GPW-107	5-9 PR	DRY HOLE
GPW-7	21-25	0.41	GPW-40A	21-25	DRY HOLE	GPW-73	24-28	BDL	GPW-108	25-29	BDL
GPW-8	21-25	0.38	GPW-41	22-26	DRY HOLE	GPW-74	25-29	BDL	GPW-109	25-29	0.14
GPW-9	48-52 PR	0.20	GPW-41A	26-30	2.39	GPW-75	21-25	BDL	GPW-110	29-33	BDL
GPW-10	21-25	0.08	GPW-42	20-24	3.86	GPW-76	21-25	BDL	GPW-111	25-29	BDL
GPW-11	22-26	DRY HOLE	GPW-43	20-24	4.82	GPW-77	21-25	DRY HOLE	GPW-112	25-29	DRY HOLE
GPW-11A	26-30	BDL	GPW-44	20-24	DRY HOLE	GPW-77A	23-27	BDL	GPW-113	11-15	0.34
GPW-12	24-28	0.03	GPW-44A	21-25	3.70	GPW-78	22-26	BDL	GPW-114	11-15	0.02
GPW-13	21-25	0.13	GPW-45	21-25	DRY HOLE	GPW-79	24-28	BDL	GPW-115	11-15	BDL
GPW-14	21-25	0.04	GPW-45A	26-30	DRY HOLE	GPW-80	23-27	BDL	GPW-116	11-15	BDL
GPW-15	6-10 PR	DRY HOLE	GPW-46	20-24	DRY HOLE	GPW-81	21-25	BDL	GPW-117	14-18 PR	DRY HOLE
GPW-16	21-25	2.06	GPW-46A	26-30	DRY HOLE	GPW-82	16-20	BDL	GPW-118	16-20 PR	DRY HOLE
GPW-17	21-25	3.03	GPW-47	28-32	BDL	GPW-83	11-15	BDL	GPW-119	20-24	DRY HOLE
GPW-18	21-25	0.02	GPW-48	27-31	BDL	GPW-84	8-12	DRY HOLE	GPW-120	25-29	DRY HOLE
GPW-19	21-25	BDL	GPW-49	20-24	0.10	GPW-84A	11-15	BDL	GPW-121	26-30	0.03
GPW-20	21-25	0.09	GPW-50	20-24	0.03	GPW-85	9-13	DRY HOLE	GPW-122	29-33	BDL
GPW-21	21-25	BDL	GPW-51	21-25	BDL	GPW-85A	11-15	BDL	GPW-123	29-33	BDL
GPW-22	20-24	DRY HOLE	GPW-52	20-24	1.46	GPW-86	11-15	BDL	GPW-124	2-6 PR	DRY HOLE
GPW-22A	21-25	1.02	GPW-53	19-23	2.03	GPW-87	11-15	0.11	GPW-125	24-28	0.06
GPW-23	20-24	0.05	GPW-54	18-22	1.57	GPW-88	11-15	BDL	GPW-126	26-30	BDL
GPW-24	20-24	5.83	GPW-55	19-23	0.54	GPW-89	11-15	BDL	TWP-1	19 PR	BDL
GPW-25	20-24	3.16	GPW-56	19-23	0.13	GPW-90	11-15	BDL	TWP-2	29	BDL
GPW-26	20-24	2.09	GPW-57	20-24	BDL	GPW-91	11-15	BDL	TWP-3	20	BDL
GPW-27	20-24	0.05	GPW-58	21-25	0.98	GPW-92	11-15	BDL	TWP-4	20	BDL
GPW-28	20-24	BDL	GPW-59	21-25	1.32	GPW-93	11-15	BDL	TWP-5	20	BDL
GPW-29	20-24	BDL	GPW-60	21-25	BDL	GPW-94	20-24	0.18	TWP-6	20	BDL
GPW-30	20-24	DRY HOLE	GPW-61	21-25	1.94	GPW-95	25-29	3.55	TWP-7	20	DRY HOLE
GPW-30A	21-25	0.02	GPW-62	21-25	2.76	GPW-96	30-34	BDL	TWP-8	20	DRY HOLE
GPW-31	20-24	0.30	GPW-63	21-25	0.48	GPW-97	35-39	BDL	TWP-9	20	0.06
GPW-32	20-24	0.04	GPW-64	21-25	DRY HOLE	GPW-98	40-44	BDL	TWP-10	13 PR	0.02
GPW-33	20-24	DRY HOLE	GPW-64A	23-27	BDL	GPW-99	24-28	DRY HOLE			
GPW-33A	21-25	BDL	GPW-65	20-24	DRY HOLE	GPW-99A	26-30	BDL			
GPW-34	20-24	0.62	GPW-65A	22-26	BDL	GPW-100	24-28	DRY HOLE			
GPW-35	20-24	BDL	GPW-66	23-27	BDL	GPW-101	20-24	BDL			

Notes: Samples Collected on July 8 through July 30, 2002

PR = Probe Refusal

Field Screening Test Results

Former SCDOT Columbia Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 071359



Midlands
Environmental
Consultants, Inc.

235 N.E. 102-415
DATE: September 5, 2002
FIGURE 7A

TABLE
FIELD PARAMETER
FORMER SCDOT COLUMBIA MAINTENANCE FACILITY
COLUMBIA, RICHLAND COUNTY, SOUTH CAROLINA
MECI PROJECT NUMBER 02-
SODHEC SITE ID NUMBER 07-

Well Number	Sample Date	Dissolved Oxygen (mg/l)	Dissolved CO ₂ (mg/l)	Temperature (° Celsius)	pH (Initial)	pH (Final)	Conductivity (Initial)	Conductivity (Final)	Ferrous Iron (mg/l)	Depth to Product	Product Thickness	Depth to Water (feet)	Well-head Elevation	Groundwater Elevation
MW-1R	8/20/2002	0.71	200+	23.1	5.60	5.61	76.6	69.5	3.4	---	---	16.15	249.01	230.85
MW-2	8/20/2002	NT	NT	NT	NT	NT	NT	NT	NT	15.82	1.12	16.94	246.62	230.63
MW-3	8/20/2002	0.58	200+	30.1	5.72	5.85	152.5	179.0	3.2	---	---	19.05	249.80	230.75
MW-4	8/20/2002	2.65	100	30.7	4.80	5.23	125.3	126.7	0.0	---	---	17.51	249.15	231.64
MW-5	8/20/2002	0.77	125	23.1	5.87	5.43	48.7	73.2	0.0	---	---	20.08	251.65	231.57
MW-6	8/20/2002	0.98	150	24.1	4.89	6.01	112.2	153.8	1.8	---	---	15.15	242.39	227.24
MW-7	8/20/2002	0.65	200+	24.5	5.67	6.07	241.0	285.6	4.0	---	---	15.10	244.03	228.93
MW-8	8/20/2002	0.59	200+	25.4	6.22	6.25	103.6	961	2.4	---	---	4.88	230.68	226.00
MW-9	8/20/2002	4.98	25	21.6	4.53	5.75	52.8	67.2	0.6	---	---	6.24	226.00	217.76
MW-10	8/20/2002	3.30	100	24.8	4.87	5.50	71.9	83.0	0.0	---	---	14.22	243.68	229.46
MW-11	8/20/2002	3.70	35	21.5	6.70	5.29	115.4	119.0	0.3	---	---	23.80	256.77	232.97
MW-12	8/20/2002	3.44	40	26.5	5.52	6.07	92.0	75.3	0.2	---	---	10.02	240.50	230.48
MW-13	8/20/2002	3.50	45	26.1	5.44	5.89	77.6	102.1	2.0	---	---	3.04	228.74	226.70
MW-14	8/20/2002	1.84	40	21.8	5.06	5.08	54.5	98.0	2.5	---	---	7.90	231.44	223.54
MW-15	8/20/2002	3.70	90	25.8	6.43	5.06	97.6	81.3	0.2	---	---	18.76	225.96	207.20
MW-16	8/20/2002	2.19	40	21.2	6.82	6.82	128.4	158.1	0.0	---	---	5.23	210.30	205.07
MW-17	8/20/2002	2.14	50	22.5	7.50	6.46	76.2	162.7	0.0	---	---	8.55	222.85	214.29
MW-18D	8/20/2002	1.87	20	27.4	6.66	6.36	275.1	133.7	0.2	---	---	36.89	246.61	209.92

Notes:
1. mg/l = milligrams per liter.
2. Elevations are referenced to an assumed sea datum (See Figure 2).
3. Groundwater depths were measured from the top of the PVC riser pipe.
4. Groundwater levels measured 8/20/02.
5. Dissolved oxygen, dissolved carbon dioxide, initial pH, initial conductivity, and temperature measurements obtained 8/19/02.
6. MW-2 contained measurable amount of free phase petroleum product.
7. Groundwater elevation for MW-2 was corrected for free product based upon a specific gravity for fuel of 0.85.
8. NT= Not Tested

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
FORMER SCDOT COLUMBIA MAINTENANCE FACILITY
COLUMBIA, SOUTH CAROLINA
MECI PROJECT NUMBER 02-416
SCDHEC SITE ID NUMBER 07359

Well Number	Sample Date	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/l)	Total BTEX (µg/l)	MTBE (µg/l)	EDB (µg/l)	Naphthalene (µg/l)	Nitrate (mg/l)	Sulfate (mg/l)	Lead (µg/l)
MW-1R	08/20/02	1.26	BDL	BDL	1.82	3.08	BDL	BDL	BDL	0.7	10	BDL
MW-2	08/20/02	30,100	41,300	3,190	17,670	92,260	408	380	1,150	NT	NT	NT
MW-3	08/20/02	5,590	12,500	1,470	7,570	27,130	416	70	715	0.6	5	54
MW-4	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.6	5	BDL
MW-5	08/20/02	25.7	17.3	1.41	12.99	57.40	BDL	BDL	BDL	0.8	5	BDL
MW-6	08/20/02	1,100	1,710	626	3,330	6,766	1.99	10	51.2	BDL	5	BDL
MW-7	08/20/02	795	726	107	131.2	1,105.8	87.7	0.11	48.3	BDL	14	26
MW-8	08/20/02	171	3.48	4.03	7.49	186.00	261	BDL	1.30	BDL	19	200
MW-9	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.0	5	BDL
MW-10	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	10	BDL
MW-11	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	5.2	5	64
MW-12	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.3	6	BDL
MW-13	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.9	6	BDL
MW-14	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.7	10	BDL
MW-15	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.1	6	BDL
MW-16	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.7	8	BDL
MW-17	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.8	6	BDL
MW-18D	08/20/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.3	10	6
SW-1	07/25/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NT	NT	NT
SW-2	07/25/02	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	NT	NT	NT

Notes: 1. BDL = Below Practical Quantitative Limits
2. µg/l = micrograms per liter
3. mg/l = milligrams per liter
4. MTBE = Methyl-Tertiary-Butyl Ether

5. See Appendix B for Laboratory Detection Limits

6. NT=Not Tested



PARAGRAPH SCIENCE

SCDHEC
IFB-32625-12/11/07-EMW
Page: 44

GRAIN SIZE DISTRIBUTION TEST DATA SHEET (ASTM D422)

JOB NAME :		SCDOT - Columbia Maintenance			
JOB NO. :	2633	REPORT NO. :	-	DATE :	9/1/00
DRILLING / PIT NO. :	MW-3	DEPTH / ELEV. :	9-11 Ft.	SAMPLE TYPE :	Jar
SAMPLE LOCATION :		-			
SOIL DESCRIPTION :					SP. GR., G_s :
Orangish Brown Clayey Fine to Medium SAND					2.6
LIQUID LIMIT, % :	-	PLAS. INDEX, % :	-	MOISTURE, % :	11.9
D ₁₀ , MM :	-	D ₃₀ , MM :	-	D ₆₀ , MM :	-
CLASSIFICATION		UNIFIED :	SM	AASHTO :	-
					COEF. OF CURV., C_c :
					COEF. OF UNFOR., C_u :
					-

SPLITTING AIR DRIED / AS RECEIVED MATERIAL ON # 10 SIEVE

AIR DRIED WEIGHT OF TOTAL SAMPLE	140.3	GRAMS	PAN / BEAKER NO. :
AIR DRIED WEIGHT RETAINED ON # 10 SIEVE	32.04	GRAMS	PAN / BEAKER NO. :
(WASHED) OVEN DRIED WT. RETAINED ON # 10	28.1	GRAMS	PAN / BEAKER NO. :
AIR DRIED WEIGHT PASSING ON # 10 SIEVE	112.2	GRAMS	
EQUIVALENT OVEN DRIED WT. PASSING # 10	100.18066	GRAMS	

MOISTURE ON AIR DRIED / AS RECEIVED MATERIAL PASSING # 10

WT. OF PAN (GRAMS)	100.50	GRAMS	PAN NO. :
AIR DRIED SOIL+ PAN (GRAMS)	215.60	GRAMS	
OVEN DRIED SOIL+ PAN (GRAMS)	203.27	GRAMS	
% MOISTURE	11.998	%	

AIR DRIED / AS RECEIVED MATERIAL FOR SIEVE & HYDROMETER ANALYSIS

AIR DRIED MATERIAL PASSING # 10	115.1	GRAMS	BEAKER NO. :
OVEN DRIED MATERIAL PASSING # 10	102.77	GRAMS	
OVEN DRIED MATERIAL REPRES. THE WHOLE SAMPLE	122.06	GRAMS	

SIEVE ANALYSIS DATA

COARSER THAN # 10 SIEVE

FINER THAN # 10 SIEVE

SIEVE SIZE	WEIGHT RETAINED (GRAMS)	MATERIAL RETAINED %	PARTICLE DIAMETER (MM)	MATERIAL PASSING %
3"	0.00	0.00	75.00	100.00
2"	0.00	0.00	50.00	100.00
1 1/2"	0.00	0.00	37.50	100.00
1"	0.00	0.00	25.00	100.00
3/4"	0.00	0.00	19.00	100.00
3/8"	0.00	0.00	9.50	100.00
# 4	7.83	6.10	4.75	93.90
# 10	20.27	15.80	2.000	84.20
# 20	16.16	29.04	0.850	70.96
# 40	33.76	43.46	0.425	56.54
# 60	50.71	57.35	0.250	42.65
# 100	63.00	67.42	0.150	32.58
# 200	71.02	73.99	0.075	26.01

HYDROMETER DATA

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9/13/00	9:30	5	22.8	1	34.0
		5	22.8	2	33.0
		5	22.8	5	33.0
		5	22.9	15	33.0
		5	22.9	30	32.5
		5	22.9	60	32.0
		5	22.8	1440	31.0
Date & Time	Zero CORR.	Temp °C	ELAPSED TIME (MINUTES)	READING (Uncorrctd)	

0.0457	24.16
0.0325	23.33
0.0206	23.33
0.0119	23.33
0.0084	22.91
0.0060	22.50
0.0012	21.66



Summary of Slug Test
Division of Underground Storage Tank Management

Site Data

UST Permit #: 07359 County: Richland
Facility Name: SCDOT - Old Columbia Maintenance Facility

Slug Data

See Appendix _____ Table _____ Figure _____ for a list of all data measurements. [water level logs, etc. (complete as appropriate)].

Water Level Recovery Data was measured by manually with water level indicator
[Hermit Data Logger, Manually with Water Level Indicator, etc. (list method)].

Complete the following table for each well tested.

COMPLETE A SECOND SHEET IF MORE THAN FOUR WELLS ARE TESTED

Slug Test Conducted in Well(s) Number

Initial Rise/Drawdown in Well (feet)

Radius of Well Casing (feet)

Effective Radius of Well (feet)

Static Saturated Aquifer Thickness (feet)

Length of Well Screen (feet)

Static Height of Water Column in Well (ft)

<u>MW-4</u>	<u>MW-5</u>		
<u>0.37</u>	<u>0.33</u>		
<u>0.083</u>	<u>0.083</u>		
<u>0.33</u>	<u>0.33</u>		
<u>30</u>	<u>30</u>		
<u>10</u>	<u>10</u>		
<u>6.71</u>	<u>5.23</u>		

Calculations

See Appendix _____ Table _____ Figure _____ for calculations (complete as appropriate).

The method for aquifer calculations was Bouwer - Rice (i.e. Bouwer-Rice, Cooper, etc.).

Calculated values by well were as follows:

Slug Test Conducted in Well(s) Number

Hydraulic Conductivity

<u>MW-4</u>	<u>MW-5</u>	
<u>9.02×10^{-5} ft/sec</u>	<u>2.07×10^{-6} ft/sec</u>	
<u>7.8 ft/day</u>	<u>0.18 ft/day</u>	

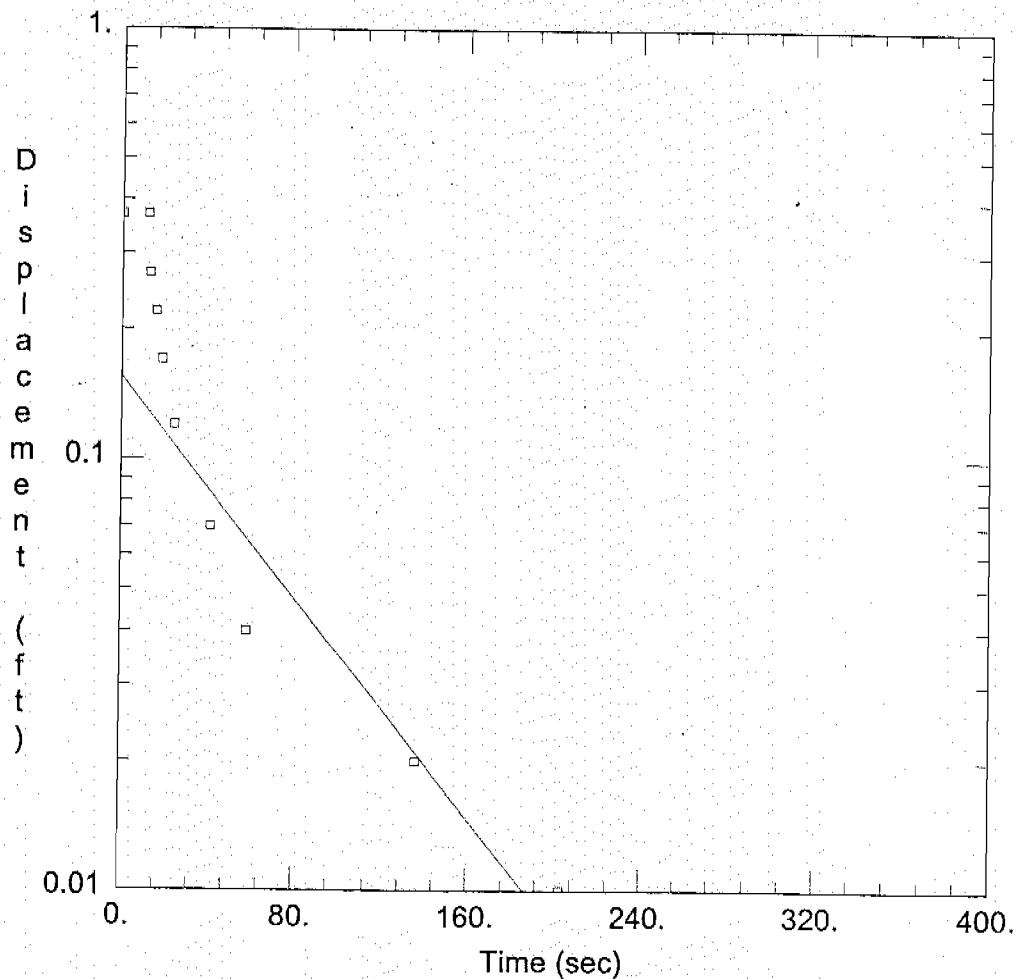
Thickness of the aquifer used to calculate hydraulic conductivity was 30 feet.

The aquifer is _____ confined _____ semi-confined X water table (check as appropriate).

The estimated seepage velocity is 285 feet per year based on

a hydraulic conductivity of 7.8 ft/day, a hydraulic gradient of 0.025, and

a porosity of 25 percent for clayey sand soil (list type i.e., silty sand, clay, etc).



SCDOT OLD COLUMBIA MAINTENANCE

Data Set: F:\USERS\GENE\SCDOT\2633MW4.AQT

Date: 09/15/00

Time: 10:05:23

PROJECT INFORMATION

Company: QORE Property Sciences

Client: SCDOT

Project: 2633

Test Location: Columbia, South Carolina

Test Well: MW-4

Test Date: August 21, 2000

AQUIFER DATA

Saturated Thickness: 30. ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA

Initial Displacement: 0.37 ft

Water Column Height: 6.71 ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.33 ft

Screen Length: 6.71 ft

Gravel Pack Porosity: 0.37

SOLUTION

Aquifer Model: Unconfined

$K = 9.017E-05$ ft/sec

Data Set: F:\USERS\GENE\SCDOT\2633MW4.AQT

Title: SCDOT Old Columbia Maintenance

Date: 09/15/00

Time: 10:05:29

PROJECT INFORMATION

Company: QORE Property Sciences

Client: SCDOT

Project: 2633

Location: Columbia, South Carolina

Test Date: August 21, 2000

Test Well: MW-4

AQUIFER DATA

Saturated Thickness: 30 ft

Anisotropy Ratio (Kz/Kr): 1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-4

X Location: 0 ft

Y Location: 0 ft

Observation Data

<u>Time (sec)</u>	<u>Displacement (ft)</u>
12.	0.37
13.	0.27
16.	0.22
19.	0.17
25.	0.12
42.	0.07
59.	0.04
136.	0.02
203.	0.01
345.	0.

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

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Parameter	Estimate	
K	9.017E-05	ft/sec
y0	0.155	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
K	0.0004716	8.738E-05	ft/sec
y0	0.814	0.1737	ft

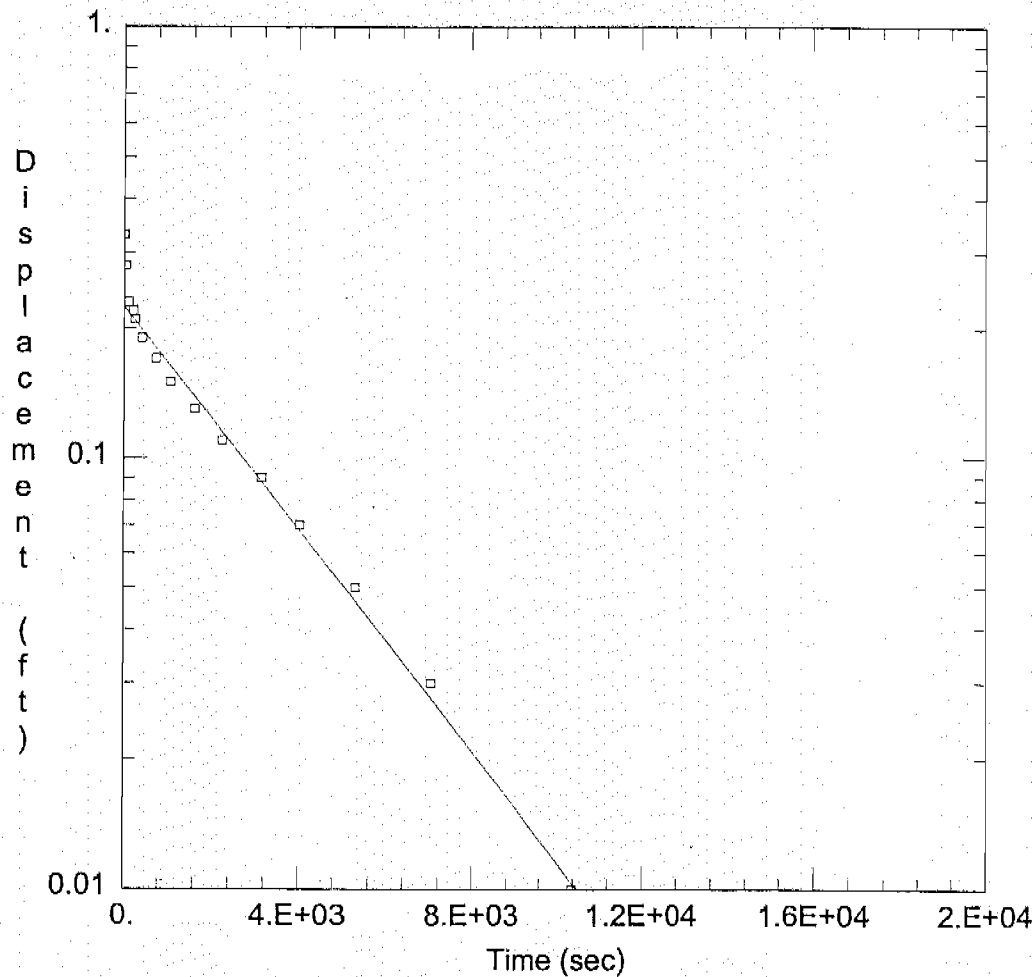
Parameter Correlations

	K	y0
K	1.00	0.97
y0	0.97	1.00

Residual Statistics

for weighted residuals

Sum of Squares ... 0.006616 ft²
Variance 0.000827 ft²
Std. Deviation 0.02876 ft
Mean 0.008036 ft
No. of Residuals ... 10
No. of Estimates ... 2



SCDOT OLD COLUMBIA MAINTENANCE

Data Set: F:\USERS\GENE\SCDOT\2633MW5.AQT

Date: 09/15/00

Time: 09:53:36

PROJECT INFORMATION

Company: QORE Property Sciences

Client: SCDOT

Project: 2633

Test Location: Columbia, South Carolina

Test Well: MW-5

Test Date: September 12, 2000

AQUIFER DATA

Saturated Thickness: 30. ft

Anisotropy Ratio (K_z/K_r): 1.

WELL DATA

Initial Displacement: 0.33 ft

Water Column Height: 5.23 ft

Casing Radius: 0.083 ft

Wellbore Radius: 0.33 ft

Screen Length: 5.23 ft

Gravel Pack Porosity: 0.37

SOLUTION

Aquifer Model: Unconfined

$K = 2.074E-06$ ft/sec

Data Set: F:\USERS\GENE\SCDOT\2633MW5.AQT
Title: SCDOT Old Columbia Maintenance
Date: 09/15/00
Time: 09:53:44

PROJECT INFORMATION

Company: QORE Property Sciences
Client: SCDOT
Project: 2633
Location: Columbia, South Carolina
Test Date: September 12, 2000
Test Well: MW-5

AQUIFER DATA

Saturated Thickness: 30 ft
Anisotropy Ratio (Kz/Kr): 1

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: MW-5

X Location: 0 ft
Y Location: 0 ft

<u>Observation Data</u>	
<u>Time (sec)</u>	<u>Displacement (ft)</u>
14.	0.33
44.	0.28
105.	0.23
215.	0.22
254.	0.21
416.	0.19
734.	0.17
1080.	0.15
1623.	0.13
2256.	0.11
3152.	0.09
4030.	0.07
5306.	0.05
7057.	0.03
1.037E+04	0.01
1.242E+04	0.

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SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	2.074E-06	ft/sec
y0	0.2247	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
K	2.748E-06	3.968E-07	ft/sec
y0	0.258	0.01222	ft

Parameter Correlations

	K	y0
K	1.00	0.54
y0	0.54	1.00

Residual Statistics

for weighted residuals

Sum of Squares ... 0.01011 ft²
Variance..... 0.0007222 ft²
Std. Deviation..... 0.02687 ft
Mean 0.002244 ft
No. of Residuals ... 16
No. of Estimates ... 2

SUMMARY of SLUG TEST (page 1 of 2)

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID # 07359 COUNTY Richland
FACILITY NAME Former SCDOT Maintenance Facility

SLUG DATA

See Appendix _____ Table _____ Figure _____ for a list of all data measurements.
(water level logs, etc.)(Complete as appropriate).

Water Level Recovery Data was measured by ORS Interface Probe
(Hermit Data Logger, Manually with Water Level Indicator, etc.)(List Method)

Complete the following table for each well tested.

COMPLETE A SECOND SHEET IF MORE THAN FOUR WELLS ARE TESTED

Slug Test Conducted in well(s) number _____
Initial Rise/Drawdown in well (feet) _____
Radius of well casing (feet) _____
Effective Radius of Well (feet) _____
Static Saturated Aquifer Thickness (feet) _____
Length of Well Screen (feet) _____
Static Height of Water Column in Well (ft) _____

MW-6	MW-7	MW-8	
4.55	4.40	8.82	
0.083	0.083	0.083	
0.75	0.75	0.75	
9.85	9.90	15.32	
12	12	12	
9.85	9.90	15.32	

Calculations

See Appendix _____ Table _____ Figure _____ for calculations

The method for aquifer calculations was NAVFAC

Calculated values by well were as follows:

Slug Test Conducted in Well(s) number _____

Hydraulic Conductivity _____

MW-6	MW-7	MW-8	
2.51E-06	4.75E-04	1.55E-04	cm/sec

Thickness of the aquifer used to calculate hydraulic conductivity was N/A feet.

The aquifer is _____ confined _____ semi-confined _____ water table (Check as Appropriate).

SEE SHEET 3

The estimated seepage velocity is 86 feet per year based on a hydraulic conductivity of 2.11E-04 cm/sec, a hydraulic gradient of 5.14E-02 ft/ft, and a porosity of 13 percent for Silty SAND soil.

SUMMARY of SLUG TEST

Groundwater Seepage Velocity Calculations (page 2 of 2)	
SOUTH CAROLINA Department of Health and Environmental Control (DHEC)	
Site Data	
SITE ID #	07359
COUNTY	Richland
FACILITY NAME	Former SCDOT Maintenance Facility
Hydraulic Conductivity (average)	
Hydraulic Conductivity Average = 2.11E-04 cm/sec (MW-6, MW-7 & MW-8)	
5.98E-01 ft./day	
4.15E-04 ft./min	
Groundwater Seepage Velocity	
<div style="display: flex; justify-content: space-between;"> <div> $V = (K_i)/(N_e)$ (ft./day) </div> <div> * Enter Values in Shaded Areas Only </div> </div> <div style="margin-top: 10px;"> where: <div style="margin-left: 20px;"> K = Hydraulic Conductivity (ft./day) I = Hydraulic Gradient (ft./ft.) Ne = Effective Permeability </div> </div> <div style="margin-top: 20px;"> <div style="display: flex; justify-content: space-between;"> <div> K = I = Ne = </div> <div style="border: 1px solid black; padding: 2px;"> 5.98E-01 ft./day 5.14E-02 ft./ft. 0.13 </div> </div> <div style="margin-top: 20px;"> V = 2.4E-01 ft./day 86 ft./year </div> </div>	
Groundwater Seepage Velocity Calculations	

Inflow for Condition A Well MW-6.xls

Inflow Permeability Calculation Former SCDOT Columbia Maintenance Facility

Test Performed: 8/20/02

MW-6

Type II (Uncased Well)

Static: 15.15 ft

*Enter Values in Shaded Areas Only

Time (min)	Depth	delta H	Ht/Ho
0.33	19.70	4.55	1.00
0.41	19.68	4.53	1.00
0.75	19.62	4.47	0.98
1.00	19.60	4.45	0.98
1.50	19.54	4.39	0.96
2.00	19.50	4.35	0.96
3.00	19.44	4.29	0.94
5.00	19.34	4.19	0.92
7.00	19.27	4.12	0.91
10.00	19.20	4.05	0.89
20.00	19.06	3.91	0.86
30.00	18.95	3.80	0.84
40.00	18.85	3.70	0.81
50.00	18.77	3.62	0.80
60.00	18.66	3.51	0.77

Information from data and plot of Ht/Ho vs time

Bore Hole Diameter: 8 in
Total Depth of Well: 25 ft
Stand Pipe Area: 50.27 in²
0.35 ft²

Coordinates from Graph for Slope Calc:

H1/Ho: 0.86
t1: 20.00 min
H2/Ho: 0.80
t2: 50.00 min

H1: 3.91 H2: 3.64
t1: 20.00 t2: 50.00

Radius R: 4.00 in
Radius R: 0.33 ft
Depth D: 9.85 ft
R/D: 0.034
D/R: 29.55

Shape Factor Determination Value: 0.616599 *

*This value is used in conjunction with

Figure 13 of Reference [1] to obtain the shape factor.

Shape Factor S: 3.9

Coeff. of Permeability (K):

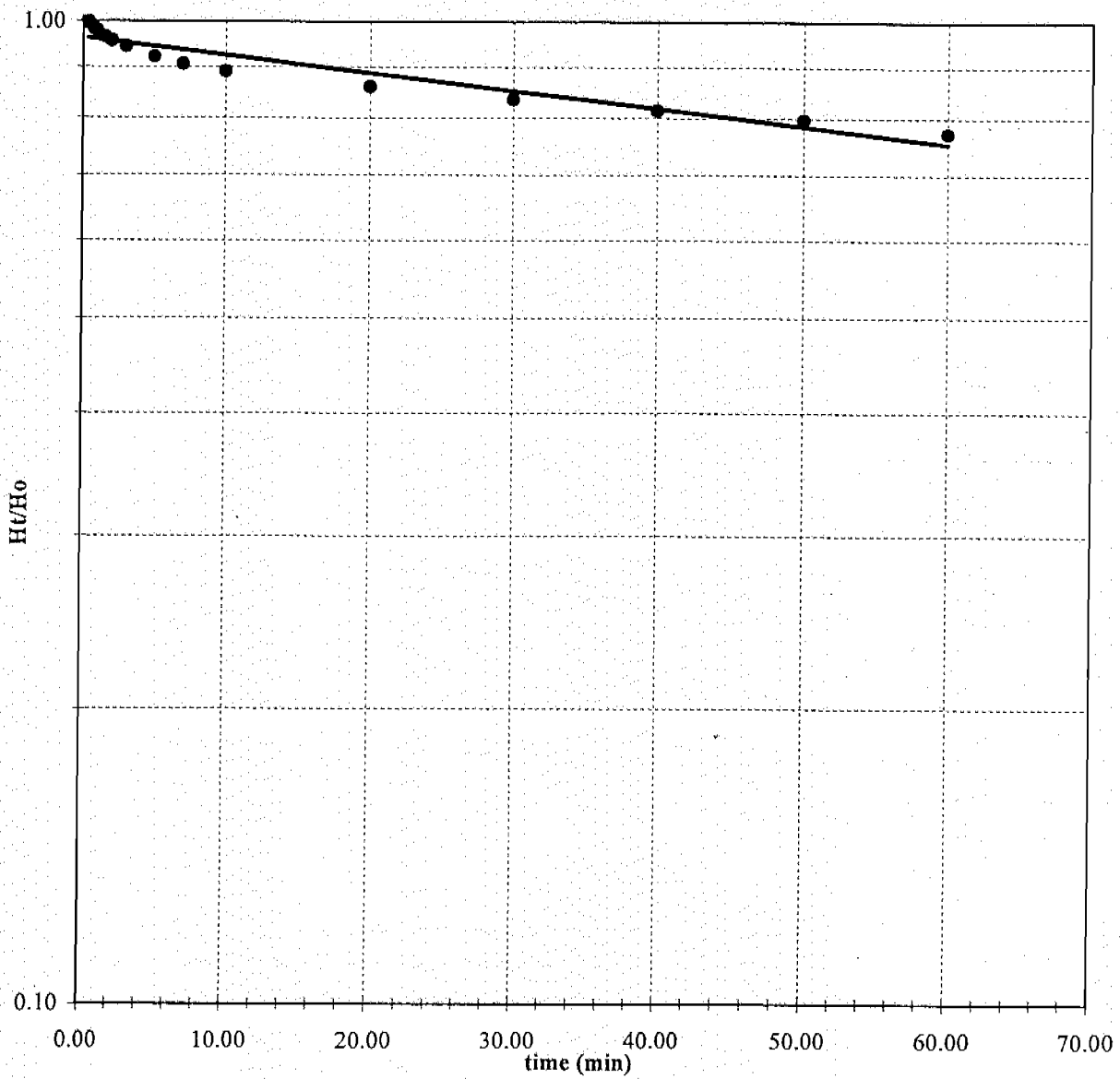
4.94E-06 ft/min

7.11E-03 ft/day

2.51E-06 cm/sec

Ref [1]: Naval Fac. Engr. Command, Design Manual 7.01, soil Mechanics, Condition A.

Inflow for Condition A Well MW-6.xls

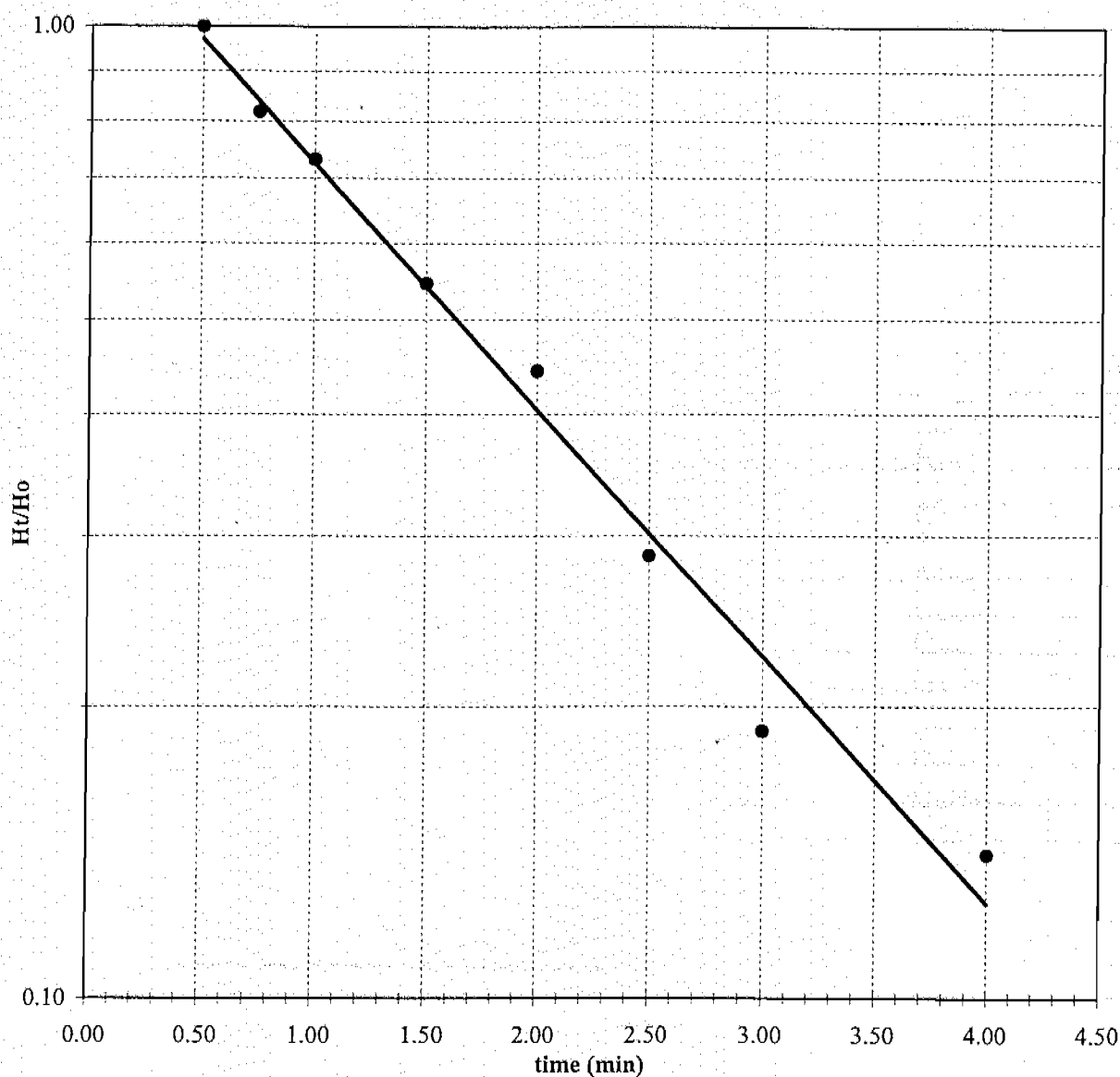


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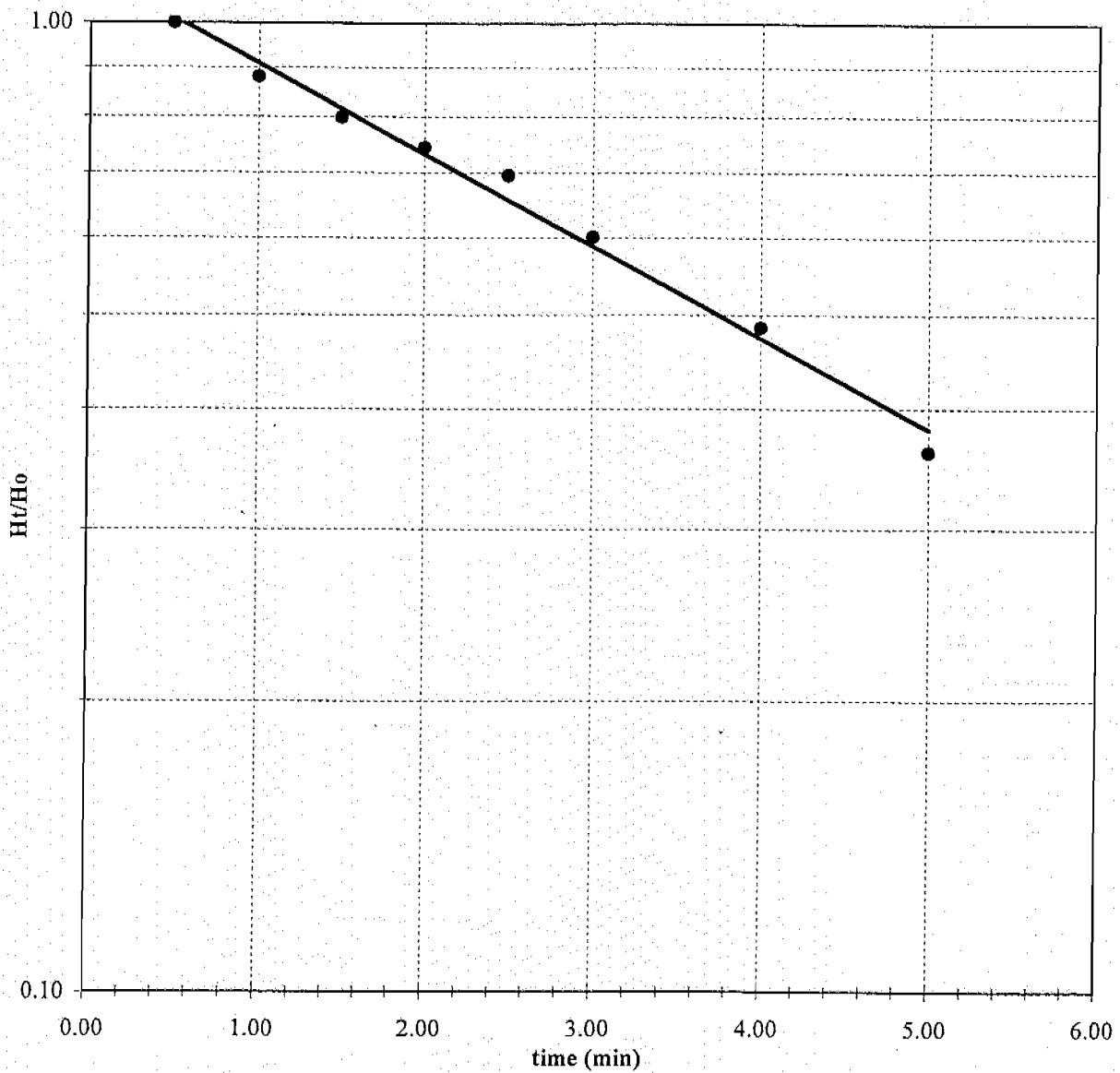
Inflow for Condition A Well MW-7.xls



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Inflow for Condition A Well MW-8.xls



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Consultants, Inc.

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Lexington, South Carolina 29013
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GEOLOGIST LOG

Boring/Well No: B-1

Project: SCDOT - Columbia Maintenance Facility		Location: Columbia		Logged By: Norman E. Partin, Jr	
County: Richland	Latitude/Longitude: NA	Drilling Date: 8/17/00		Drilled Depth: 21.0 ft.	
State: South Carolina	Driller: Rich Lemire		Method: 4.25" HSA		
Drilling Co.: SAEDACCO	Equipment: Mobile B-57		Sampling Method: Split Spoon		
Abandonment: NA	Ground Elevation: NA	Static Water Level/Date: NA		Hole Diameter:	

[illegible]

Notes: Tank # 1 Basin - 1,000 gallon waste oil tank

Job No.: C-2633	Grid No.: NA	QORE Property Sciences	Page 1 of 1
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GEOLOGIST LOG

Boring/Well No: B-2

Project: SCDOT - Columbia Maintenance Facility		Location: Columbia		Logged By: Norman E. Partin, Jr	
County: Richland	Latitude/Longitude: NA	Drilling Date: 8/17/00		Drilled Depth: 16.0 ft.	
State: South Carolina	Method: 4.25" HSA		Drilling Co.: SAEDACCO		
Equipment: Mobile B-57		Sampling Method: Split Spoon			
Abandonment: NA	Ground Elevation: NA	Static Water Level/Date: NA			Hole Diameter:

Sample	Depth	Penetration Resistance	Sample Rec. (%)	OVA Test Data	Lithology / Remarks	Graphic Log
					<u>Grass</u>	
				1	<u>Sandy Clay</u> , red-orange, gray, yellow-orange, coarse to very fine, firm, dry, no odor.	
	5					
				2	<u>Sandy Clay</u> , as above.	
	10				<u>Clay</u> , gray, orange streaks, fine to very fine, very firm, low plasticity, dry, no odor.	
				220	<u>Clay</u> , as above.	
	15				<u>Sand</u> , pink, coarse to fine, moist, trace odor.	
					<u>Clay</u> , as above moist.	
					<u>Sand</u> , as above, moist.	
					Boring Terminated at 16 feet.	
	20					
	25					

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Notes: Tank # 6 Basin

Job No.: C-2633	Grid No.: NA	QORE Property Sciences	Page 1 of 1
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GEOLOGIST LOG

Boring/Well No: B-3

Project: SCDOT - Columbia Maintenance Facility		Location: Columbia		Logged By: Norman E. Partin, Jr	
County: Richland		Latitude/Longitude:		Drilling Date:	
State: South Carolina		NA		8/17/00	
Driller: Rich Lemire		Method: 4.25" HSA		Sampling Method: Split Spoon	
Drilling Co.: SAEDACCO		Equipment: Mobile B-57			
Abandonment: NA		Ground Elevation: NA		Static Water Level/Date: NA	
Hole Diameter:					

Sample	Depth	Penetration Resistance	Sample Rec. (%)	OVA Test Data	Lithology / Remarks	Graphic Log
	5			140	<u>Clayey Sand</u> , orange, tan, dark gray, coarse to fine, firm, subangular to angular, dry, petro odor and staining.	
	10			50	<u>Clay</u> , gray, red streaks, firm, fine to very fine, trace petro odor.	
	15			800	<u>Clay</u> , as above. <u>Clayey Sand</u> , orange, tan, brown, coarse to fine, loose, subangular to angular, wet, petro odor. Boring Terminated at 16 feet.	
	20					
	25					

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Notes: Tank # 6 Basin

GEOLOGIST LOG

Boring/Well No: B-4

[illegible]

Notes: Tank # 6 Basin

Job No.:
C-2633

Grid No.:
NA

QORE Property Sciences

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GEOLOGIST LOG

Boring/Well No: B-5

Project: SCDOT - Columbia Maintenance Facility		Location: Columbia		Logged By: Norman E. Partin, Jr	
County: Richland		Latitude/Longitude:		Drilling Date:	
State: South Carolina		NA		8/18/00	
Driller: Rich Lemire		Method: 4.25" HSA		Sampling Method: Split Spoon	
Drilling Co.: SAEDACCO		Equipment: Mobile B-57			
Abandonment: NA		Ground Elevation: NA		Static Water Level/Date: NA	
Hole Diameter:					

Sample	Depth	Penetration Resistance	Sample Rec. (%)	OVA Test Data	Lithology / Remarks	Graphic Log
				580	Clayey <u>Sand</u> , tan, brown, coarse to fine, loose, moist, petro odor and staining.	
				> 1000	Clayey <u>Sand</u> , as above.	
				> 1000	Sandy <u>Clay</u> , mottled, red, orange, tan, fine to very fine, firm, dry, petro odor and staining.	
	5			> 1000	Sandy <u>Clay</u> , as above.	
				> 1000	Sandy <u>Clay</u> , as above, rock at 7' and 7.75'.	
				> 1000	<u>Rock</u> , quartz.	
	10				Boring Terminated at 10 feet.	
	15					
	20					
	25					

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Notes: Piping/Dispenser Area

GEOLOGIST LOG

Boring/Well No: B-6

Project: SCDOT - Columbia Maintenance Facility		Location: Columbia		Logged By: Norman E. Partin, Jr	
County: Richland		Latitude/Longitude: NA		Drilling Date: 8/18/00	
State: South Carolina				Drilled Depth: 16.0 ft.	
Driller: Rich Lemire		Method: 4.25" HSA			
Drilling Co.: SAEDACCO		Equipment: Mobile B-57		Sampling Method: Split Spoon	
Abandonment: NA		Ground Elevation: NA		Static Water Level/Date: NA	
				Hole Diameter:	

Sample	Depth	Penetration Resistance	Sample Rec. (%)	OVA Test Data	Lithology / Remarks	Graphic Log
					<u>Grass</u>	
					<u>Clayey Sand</u> , brown, yellow, orange, firm, coarse to fine, angular to subangular, dry, no odor.	
	5			0		
	10			0	<u>Clayey Sand</u> , as above, moist.	
					<u>Clay</u> , tan, gray, firm, low plasticity, dry, no odor.	
	15			1	<u>Silty Sand</u> , tan, gray, trace orange, clay bands 15.25-15.5, moist, no odor.	x x x
					Boring Terminated at 16 feet.	
	20					
	25					

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Notes: Tanks 345 Basin

GEOLOGIST LOG

Boring/Well No: B-7

Project: SCDOT - Columbia Maintenance Facility		Location: Columbia		Logged By: Norman E. Partin, Jr	
County: Richland		Latitude/Longitude:		Drilling Date:	
State: South Carolina		NA		8/18/00	
Driller: Rich Lemire		Method: 4.25" HSA		Drilled Depth:	
Drilling Co.: SAEDACCO		Equipment: Mobile B-57		16.0 ft.	
Abandonment:		Ground Elevation:		Static Water Level/Date:	
NA		NA		NA	
				Hole Diameter:	

Sample	Depth	Penetration Resistance	Sample Rec. (%)	OVA Test Data	Lithology / Remarks	Graphic Log
	5			1.4	Clayey <u>Sand</u> , orange, gray, coarse to fine, firm, dry, no odor.	
	10			1.4	<u>Clay</u> , gray with red and orange, firm, dry, no odor.	
	15			1.2	Silty <u>Sand</u> , tan, gray, trace orange, moist, no odor.	x x x x
	20				Boring Terminated at 16 feet.	
	25					

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Notes:

GEOLOGIST LOG

Boring/Well No: MW-3

Project: SCDOT		Location: Marsteller Street		Logged By: Norman E. Partin Jr.	
County: Richland	Latitude/Longitude: ---	Drilling/Installation Date: 8/17/00		Drilled Depth: 24.0 ft.	Well Depth: 24 feet
State: South Carolina					
Driller: Rich Lemire		Method: 4.25 inch HSA		Development Method: Submersible Pump	
Drilling Co.: SAEDACCO		Equipment: Mobile B-57		Sampling Method: Split Spoon	
TOC Elevation: 99.86	Ground Elevation: ---	Static Water Level/Date: 18.9 8/21/00		Reference Point: TOC	Ground-Water Elevation: 80.96
Casing Type: PVC		Casing Diameter: 2 inches		Depth Interval: 0-14 feet	
				Hole Diameter: 8 inches	
Screen Type: PVC		Screen Diameter: 2 inches		Depth Interval: 14-24 feet	
				Slot Size: 0.01	
Grout: Portland Cement		Seal: Bentonite		Gravel Pack: Sand	
Interval: 0-10 feet		Interval: 10-12 feet		Interval: 12-24 feet	

Sample	Depth	Penetration Resistance	Sample Rec. (%)	OVA Test Data (ppm)	Lithology / Remarks	Graphic Log	Well Completion
					<u>Asphalt</u>		
					<u>Clayey Sand</u> , red, coarse to fine, very hard, firm, dry, no odor.		
	5			2	<u>Clayey Sand</u> , red, coarse to fine, very hard, firm, dry, no odor.		
	10			> 1000	<u>Clayey Sand</u> , gray, orange, tan, coarse to fine, quartz pebbles, loose, dry, trace odor.		
	15			> 1000	<u>Clayey Sand</u> , tan, orange, gray clay lense 14.5-14.75, coarse to fine, firm, moist, trace petroleum odor.		
				> 1000	<u>Clay</u> , gray, tan, firm, fine to very fine, trace (-) sand, moist, trace petroleum odor.		

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Notes:

GEOLOGIST LOG

Boring/Well No: MW-3

Project: SCDOT		Location: Marsteller Street		Logged By: Norman E. Partin Jr.	
<div style="display: flex; align-items: center;"> <div style="width: 10px; height: 100px; background-color: #cccccc; margin-right: 5px;"></div> <div style="width: 100%; height: 100px; border: 1px solid black; position: relative;"> <!-- Depth Scale --> <div style="position: absolute; left: 5px; top: 0; bottom: 0; display: flex; flex-direction: column-reverse; justify-content: space-between; padding: 5px;"> 25 30 35 40 45 50 </div> <!-- Log Description Area --> <div style="position: absolute; left: 15px; top: 0; bottom: 0; width: 95%; height: 100%; border: 1px solid black;"></div> </div> </div>		<div style="border: 1px solid black; padding: 5px;"> Clayey Sand, tan, orange, coarse to fine, loose, subangular to subrounded, trace petroleum odor, wet. </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> Boring terminated at 24 feet. </div>		<div style="display: flex; align-items: center;"> <div style="width: 10px; height: 100px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px); margin-right: 5px;"></div> <div style="width: 100%; height: 100px; border: 1px solid black; position: relative;"> <!-- Depth Scale --> <div style="position: absolute; left: 5px; top: 0; bottom: 0; display: flex; flex-direction: column-reverse; justify-content: space-between; padding: 5px;"> 25 30 35 40 45 50 </div> <!-- Log Description Area --> <div style="position: absolute; left: 15px; top: 0; bottom: 0; width: 95%; height: 100%; border: 1px solid black;"></div> </div> </div>	
Notes:					
Job No.: C-2633		Grid No.:		QORE Property Sciences	
				Page 2 of 2	

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GEOLOGIST LOG

Boring/Well No: MW-4

Project: SCDOT		Location: Marsteller Street		Logged By: Norman E. Partin Jr.	
County: Richland State: South Carolina		Latitude/Longitude: ---		Drilling/Installation Date: 8/18/00	Drilled Depth: 24.0 ft. Well Depth: 24 feet
Driller: Rich Lemire Drilling Co.: SAEDACCO		Method: 4.25 inch HSA Equipment: Mobile B-57		Development Method: Submersible Pump Sampling Method: Split Spoon	
TOC Elevation: 99.21		Ground Elevation: ---		Static Water Level/Date: 17.29 8/21/00	Reference Point: TOC Ground-Water Elevation: 81.92
Casing Type: PVC		Casing Diameter: 2 inches		Depth Interval: 0-14 feet	Hole Diameter: 8 inches
Screen Type: PVC		Screen Diameter: 2 inches		Depth Interval: 14-24 feet	Slot Size: 0.01
Grout: Portland Cement Interval: 0-10 feet		Seal: Bentonite Interval: 10-12 feet		Gravel Pack: Sand Interval: 12-24 feet	

Sample	Depth	Penetration Resistance	Sample Rec. (%)	OVA Test Data (ppm)	Lithology / Remarks	Graphic Log	Well Completion
					<u>Asphalt</u>		
					Clayey Sand, tan, orange, gray, coarse to fine, angular to subangular, dry, no odor.		
	5			1	Clayey Sand, tan, orange, gray, coarse to fine, firm, angular, to subangular, dry, no odor.		
	10			106	Clay, orange, gray, firm, trace very fine sand, dry, trace odor.		
	15			6	Clay, as above, more gray.		
					SCDHEC IFB-32625-12/11/07-EMW Page: 70		
				2	Clayey Sand, tan, orange, gray, coarse to fine, firm, saturated, no odor.		

Notes:

GEOLOGIST LOG

Boring/Well No: MW-4

Project: SCDOT		Location: Marsteller Street		Logged By: Norman E. Partin Jr.	
		Boring terminated at 24 feet.			
		<div> <div>SCDHEC</div> <div>IFB-32625-12/11/07-EMW</div> <div>Page: 71</div> </div>			
Notes:					
Job No.: C-2633		Grid No.:		<div>QORE Property Sciences</div> <div>Page 2 of 2</div>	

GEOLOGIST LOG

Boring/Well No: MW-5

Project: SCDOT		Location: Marsteller Street		Logged By: Norman E. Partin Jr.	
County: Richland	Latitude/Longitude: ---	Drilling/Installation Date: 8/18/00		Drilled Depth: 24.0 ft.	Well Depth: 24 feet
Driller: Rich Lemire		Method: 4.25 inch HSA		Development Method: Submersible Pump	
Drilling Co.: SAEDACCO		Equipment: Mobile B-57		Sampling Method: Split Spoon	
TOC Elevation: 101.7	Ground Elevation: ---	Static Water Level/Date: 19.57 8/21/00		Reference Point: TOC	Ground-Water Elevation: 82.13
Casing Type: PVC		Casing Diameter: 2 inches		Depth Interval: 0-14 feet	
Screen Type: PVC		Screen Diameter: 2 inches		Depth Interval: 14-24 feet	
Grout: Portland Cement		Seal: Bentonite		Gravel Pack: #2 Sand	
Interval: 0-10 feet		Interval: 10-12 feet		Interval: 12-24 feet	

Sample	Depth	Penetration Resistance	Sample Rec. (%)	OVA Test Data (ppm)	Lithology / Remarks	Graphic Log	Well Completion
					<u>Asphalt</u>		
					<u>Clayey Sand</u> , red, orange, tan, coarse to fine, firm, dry, no odor.		
	5			1	<u>Clayey Sand</u> , red, orange, tan, coarse to fine, firm, dry, no odor.		
					<u>Clay</u> , gray, some red, firm, dry, no odor.		
	10			2.75	<u>Clay</u> , as above.		
					<u>Clay</u> , as above, more tan.		
	15			140	<u>Silty Clayey Sand</u> , orange, tan, coarse to fine, loose, moist, no odor.		
				80	<u>Clay</u> , tan, gray, fine to very fine, firm, saturated.		

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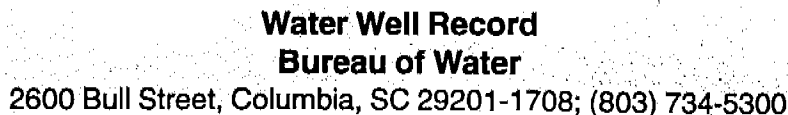
Notes:	
Job No.: C-2633	Grid No.:
QORE Property Sciences	
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GEOLOGIST LOG

Boring/Well No: MW-5

Project: SCDOT		Location: Marsteller Street		Logged By: Norman E. Partin Jr.	
		<div>Boring terminated at 24 feet.</div>			
Notes:		<div>SCDHEC</div> <div>IFB-32625-12/11/07-EMW</div> <div>Page: 73</div>			
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COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)



4. OWNER OF WELL: S.C. DOT Columbia, S.C.
Address:

County: Richland Co System Name: SC DOT

Telephone No.:

Latitude: Longitude:

Engineer: Gore Property, Science
Address: 3 Technology Circle
Columbia SC 29203
Telephone No.: 803-935-1700

Distance and Direction from Road Intersections:

see map on back

Street Address & City of Well Location:

Sketch Map:

MW 4

see map on back

2. CUTTING SAMPLES: ☐ Yes ☐ No

Geophysical Logs: ☐ Yes (please enclose) ☐ No

[illegible]

*Indicate Water Bearing Zones

(Use a 2nd sheet if needed)

3. REMARKS:

9. SCREEN

Type: DVC Diam.: 2"
Slot/Gauge: .010 Length: 101
Set Between: 14 ft. and 24 ft. NOTE: MULTIPLE SCREENS
USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL

ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.

_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

12. WATER QUALITY

Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No

Installed from 12 ft. to 24
Effective size # 2 Uniformity Coefficient sand

14. WELL GROUTED? ☒ Yes ☐ No

☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other _____
Depth: From 0 ft. to 10 ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. direction _____

_____ Type well disinfected ☐ Yes Type: _____
upon completion ☐ No Amount: _____

16. PUMP: Date installed: _____ Not installed ☐

Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm

TYPE: ☐ Submersible ☐ Jet (shallow SCDFEC

☐ Jet (deep) ☐ Reciprocating IFB-32625-12/11/07-EMW

17. WATER WELL CONTRACTOR'S CERTIFICA Page: 75

Registered Business Name: **SAEDACCO** Date: **8-17-00**

Address: 10401 John Price Rd Charlotte, NC

Signed: Richard Lemire Cert. No.: 1423

Depth (Feet)	Description	OVA PPM	Well Diagram	Penetration Blows Per Foot									
				0	5	10	20	40	60	80	100		
	Grass and Topsoil												
	Brown, Fine to Medium Sandy Clayey SILT												
5													
	Brown, Fine to Medium Sandy CLAY												
10													
15													
20													
	Orange, Fine to Medium Sandy CLAY												
25													
	Boring Terminated at 25.0 Feet. Monitoring Well Installed to 25.0 Feet. Groundwater Measured at 18.15 Feet Below Ground Surface on 8/20/02.												
30													
35													

NO BLOWCOUNTS RECORDED

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TEST BORING RECORD
Former SCDOT Columbia
Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 07359
MECI Project Number 02-416

Boring Number: MW-1R
Date Drilled: 8/7/02
Drilled By: American Environmental
Drilling, Inc.
Logged By: J. Bailey

Prepared By:
Midlands
Environmental
Consultants, Inc.
1144 Old Two Notch Road
Lexington, South Carolina 29073
(803) 808-2043 fax: 808-2048

Depth (Feet)	Description	OVA PPM	Well Diagram	Penetration Blows Per Foot										
				0	5	10	20	40	60	80	100			
	Asphalt with Stone Base													
	Red, Silty Clayey Fine to Medium SAND													
5		23												
10		50												
	Red, Silty CLAY													
15		ND												
20		3.0												
25		35												
	Boring Terminated at 25.0 Feet. Monitoring Well Installed to 25.0 Feet. Groundwater Measured at 15.15 Feet Below Ground Surface on 8/20/02.													
30														
35														

NO BLOWCOUNTS RECORDED

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TEST BORING RECORD
Former SCDOT Columbia
Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 07359
MECI Project Number 02-416

Boring Number: MW-6
Date Drilled: 8/1/02
Drilled By: American Environmental
Drilling, Inc.
Logged By: J. Bailey

Prepared By:
Midlands
Environmental
Consultants, Inc.
1144 Old Two Notch Road
Lexington, South Carolina 29073
(803) 808-2043 fax: 808-2048

Depth (Feet)	Description	OVA PPM	Well Diagram	Penetration Blows Per Foot									
				0	5	10	20	40	60	80	100		
	Asphalt with Stone Base												
	Brown, Silty Fine to Medium SAND												
5		ND											
	Brown, Fine to Medium Sandy CLAY												
10		250											
	Brown, Silty Fine to Medium SAND												
15		15											
	Tan, Fine to Medium Sandy CLAY												
20		5.0											
		ND											
25	Boring Terminated at 25.0 Feet. Monitoring Well Installed to 25.0 Feet. Groundwater Measured at 15.10 Feet Below Ground Surface on 8/20/02.												
30													
35													


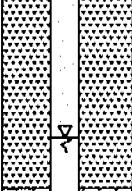
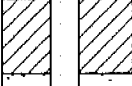
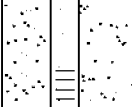

NO BLOWCOUNTS RECORDED

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TEST BORING RECORD
Former SCDOT Columbia
Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 07359
MECI Project Number 02-416

Boring Number: MW-7
Date Drilled: 8/7/02
Drilled By: American Environmental
Drilling, Inc.
Logged By: J. Bailey

Prepared By:
Midlands
Environmental
Consultants, Inc.
1144 Old Two Notch Road
Lexington, South Carolina 29073
(803) 808-2043 fax: 808-2048

Depth (Feet)	Description	OVA PPM	Well Diagram	Penetration Blows Per Foot									
				0	5	10	20	40	60	80	100		
	Grass and Topsoil												
	Brown, Silty Fine to Medium SAND												
5												NO BLOWCOUNTS RECORDED	
	Brown, Fine to Medium Sandy CLAY												
10													
	Brown, Silty Fine to Medium SAND												
15													
	Tan, Fine to Medium Sandy CLAY												
20													
	Boring Terminated at 20.0 Feet. Monitoring Well Installed to 20.0 Feet. Groundwater Measured at 4.68 Feet Below Ground Surface on 8/20/02.												
25													
30													
35													

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TEST BORING RECORD
Former SCDOT Columbia
Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 07359
MECI Project Number 02-416

Boring Number: MW-8
Date Drilled: 8/14/02
Drilled By: American Environmental Drilling, Inc.
Logged By: J. Bailey

Prepared By:
Midlands
Environmental
Consultants, Inc.
1144 Old Two Notch Road
Lexington, South Carolina 29013
(803) 808-2043 Fax: 808-2048

Depth (Feet)	Description	OVA PPM	Well Diagram 0	Penetration Blows Per Foot									
				5	10	20	40	60	80	100			
	Grass and Topsoil												
	Tan, Fine to Medium Sandy SILT												
5													
10													
	White, Fine to Medium Sandy SILT												
15													
	White, Fine to Medium Sandy CLAY												
20													
	Orange, Fine to Medium Sandy Silty CLAY												
25													
	Boring Terminated at 25.0 Feet. Monitoring Well Installed to 25.0 Feet. Groundwater Measured at 8.24 Feet Below Ground Surface on 8/20/02.												
30													
35													

NO BLOWCOUNTS RECORDED

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TEST BORING RECORD
Former SCDOT Columbia
Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 01359
MECI Project Number 02-416

Boring Number: MW-9
Date Drilled: 8/8/02
Drilled By: American Environmental
Drilling, Inc.
Logged By: J. Bailey

Prepared By:
Midlands
Environmental
Consultants, Inc.
1144 Old Two Notch Road
Lexington, South Carolina 29013
(803) 808-2043 fax: 808-2048

Depth (Feet)	Description	OVA PPM	Well Diagram	Penetration Blows Per Foot									
				0	5	10	20	40	60	80	100		
	Asphalt with Stone Base												
	Red, Clayey Fine to Medium SAND												
5		ND											
	Red, Fine to Medium Sandy CLAY												
10		ND											
15		11											
20		ND											
25		ND											
	Boring Terminated at 25.0 Feet. Monitoring Well Installed to 25.0 Feet. Groundwater Measured at 14.22 Feet Below Ground Surface on 8/20/02.												
30													
35													

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TEST BORING RECORD
Former SCDOT Columbia
Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 07359
MECI Project Number 02-416

Boring Number: MW-10
Date Drilled: 8/7/02
Drilled By: American Environmental
Drilling, Inc.
Logged By: J. Bailey

Prepared By:
Midlands
Environmental
Consultants, Inc.
1144 Old Two Notch Road
Lexington, South Carolina 29073
(803) 808-2043 fax: 808-2048

Depth (Feet)	Description	OVA PPM	Well Diagram	Penetration Blows Per Foot									
				0	5	10	20	40	60	80	100		
	Grass and Topsoil												
	Brown, Fine to Medium Sandy SILT												
5													
	Brown, Fine to Medium Sandy CLAY												
10													
15													
20													
	Orange, Fine to Medium Sandy CLAY												
25													
	Boring Terminated at 25.0 Feet. Monitoring Well Installed to 25.0 Feet. Groundwater Measured at 23.80 Feet Below Ground Surface on 8/20/02.												
30													
35													

NO BLOWCOUNTS RECORDED

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TEST BORING RECORD
Former SCDOT Columbia
Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 07359
MECI Project Number 02-416

Boring Number: MW-11
Date Drilled: 8/14/02
Drilled By: American Environmental
Drilling, Inc.
Logged By: J. Bailey

Prepared By:
Midlands
Environmental
Consultants, Inc.
1144 Old Two Notch Road
Lexington, South Carolina 29073
(803) 808-2043 Fax: 808-2048

Depth (Feet)	Description	OVA PPM	Well Diagram	Penetration Blows Per Foot									
				0	5	10	20	40	60	80	100		
	Asphalt with Stone Base												
	Tan, Fine to Medium Sandy CLAY												
5													
10													
15	Orange, Fine to Medium Sandy SILT												
20													
25	Boring Terminated at 25.0 Feet. Monitoring Well Installed to 25.0 Feet. Groundwater Measured at 10.02 Feet Below Ground Surface on 8/20/02.												
30													
35													

NO BLOWCOUNTS RECORDED

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TEST BORING RECORD
Former SCDOT Columbia
Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 07359
MECI Project Number 02-416

Boring Number: MW-12
Date Drilled: 8/14/02
Drilled By: American Environmental
Drilling, Inc.
Logged By: J. Bailey

Prepared By:
Midlands
Environmental
Consultants, Inc.
1144 Old Two Notch Road
Lexington, South Carolina 29013
(803) 808-2043 fax: 808-2048

Depth (Feet)	Description	OVA PPM	Well Diagram 0	Penetration Blows Per Foot									
				5	10	20	40	60	80	100			
	Grass and Topsoil												
	Tan, Fine to Medium Sandy SILT												
5													
10													
	White, Fine to Medium Sandy SILT												
15													
	White, Fine to Medium Sandy CLAY												
20													
	Orange, Fine to Medium Sandy Silty CLAY												
25													
	Boring Terminated at 25.0 Feet. Monitoring Well Installed to 25.0 Feet. Groundwater Measured at 7.90 Feet Below Ground Surface on 8/20/02.												
30													
35													

NO BLOWCOUNTS RECORDED

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TEST BORING RECORD
Former SCDOT Columbia
Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 07359
MECI Project Number 02-416

Boring Number: MW-14
Date Drilled: 8/8/02
Drilled By: American Environmental
Drilling, Inc.
Logged By: J. Bailey

Prepared By:
Midlands
Environmental
Consultants, Inc.
1144 Old Two Notch Road
Lexington, South Carolina 29073
(803) 808-2043 Fax: 808-2048

Depth (Feet)	Description	OVA PPM	Well Diagram	Penetration Blows Per Foot									
				0	5	10	20	40	60	80	100		
	Grass and Topsoil												
	Orange, Silty Fine to Medium SAND												
5													
	Orange, Silty CLAY												
10													
15													
	Brown, Silty CLAY												
20													
25													
	Boring Terminated at 25.0 Feet. Monitoring Well Installed to 25.0 Feet. Groundwater Measured at 18.76 Feet Below Ground Surface on 8/20/02.												
30													
35													

NO BLOWCOUNTS RECORDED

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TEST BORING RECORD
Former SCDOT Columbia
Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 07359
MECI Project Number 02-416

Boring Number: MW-15
Date Drilled: 8/8/02
Drilled By: American Environmental
Drilling, Inc.
Logged By: J. Bailey

Prepared By:
Midlands
Environmental
Consultants, Inc.
1144 Old Two Notch Road
Lexington, South Carolina 29073
(803) 828-2043 fax: 808-7048

Depth (Feet)	Description	OVA PPM	Well Diagram	Penetration Blows Per Foot										
				0	5	10	20	40	60	80	100			
	Grass and Topsoil													
	Orange, Silty Fine to Medium SAND													
5	Orange, Silty CLAY	ND												
10		ND												
15	Brown, Silty CLAY	ND												
20		ND												
25	Boring Terminated at 25.0 Feet. Monitoring Well Installed to 25.0 Feet. Groundwater Measured at 5.23 Feet Below Ground Surface on 8/20/02.	ND												
30														
35														

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TEST BORING RECORD
Former SCDOT Columbia
Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 07359
MECI Project Number 02-416

Boring Number: MW-16
Date Drilled: 8/8/02
Drilled By: American Environmental
Drilling, Inc.
Logged By: J. Bailey

Prepared By:
Midlands
Environmental
Consultants, Inc.
1144 Old Two Notch Road
Lexington, South Carolina 29073
(803) 808-2043 fax: 808-2048

Depth (Feet)	Description	OVA PPM	Well Diagram	Penetration Blows Per Foot									
				0	5	10	20	40	60	80	100		
	Grass and Topsoil												
	Orange, Silty Fine to Medium SAND												
5													
	Orange, Silty CLAY												
10													
15													
	Brown, Silty CLAY												
20													
25													
	Boring Terminated at 25.0 Feet. Monitoring Well Installed to 25.0 Feet. Groundwater Measured at 8.56 Feet Below Ground Surface on 8/20/02.												
30													
35													

NO BLOWCOUNTS RECORDED

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TEST BORING RECORD
Former SCDOT Columbia
Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 07359
MECI Project Number 02-416

Boring Number: MW-17
Date Drilled: 8/8/02
Drilled By: American Environmental
Drilling, Inc.
Logged By: J. Bailey

Prepared By:
Midlands
Environmental
Consultants, Inc.
1144 Old Two Notch Road
Lexington, South Carolina 29073
(803) 808-2043 fax: 808-2048

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IFB-32625-12/11/07-EMW
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TEST BORING RECORD
Former SCDOT Columbia
Maintenance Facility
Columbia, South Carolina
SCDHEC Site ID 07359
MECI Project Number 02-416

Boring Number:	MW-18D
Date Drilled:	8/9/02
Drilled By:	American Environmental Drilling Inc.
Logged By:	J. Bailey

Prepared By:

 **Midlands
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